

WESTERN INDUSTRY

VOLUME IX
NUMBER 5



* Heavy industry moves West. Steel blast furnace at Geneva, Utah. For details of illustration, see page 5.

Twenty-Five Cents

May, 1944



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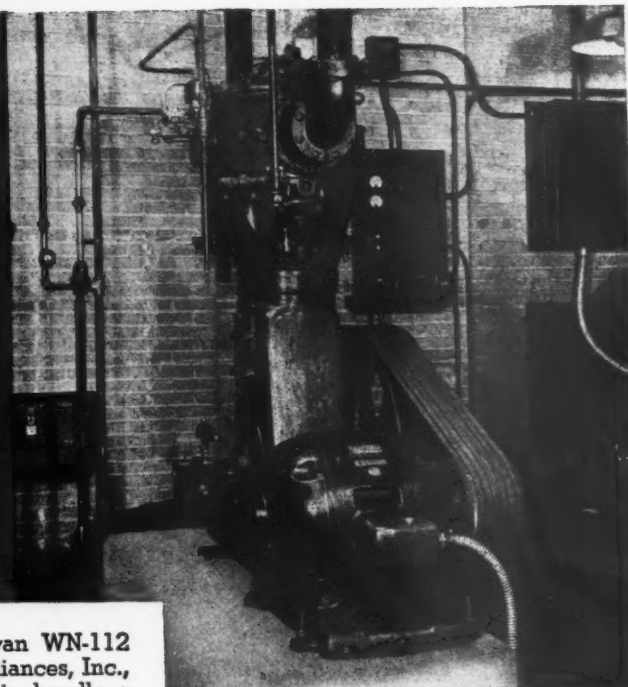
Home Appliances, Inc.

Following up the purchase of a Sullivan WN-112 compressor in 1937, Bendix Home Appliances, Inc., bought a Sullivan WG-9 Compressor to handle a sandblast load. The plant engineer has this to say: "We won't worry about it if it is built like the WN-112." (That's the point; it is.) "That WN-112 has been running 24 hours a day for the last 7 months; and, except for a man checking the oil regularly, you'd never know it was in the plant."

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Sullivan WG-9 Compressor for 24 hour a day service. Capacities 153 to 822 CFM, pressures 30 to 150 psi.

4 THINGS TO MAKE SURE OF WHEN YOU BUY AN AIR COMPRESSOR

- 1 Are working parts made of longest-life material available... and not a compromise? Note for example, the generous size WG-9 cross-heads tin plated and running in mirror-finish honed liners of tough alloy steel almost obviating wear.
- 2 After long service, can working parts be easily replaced to bring back "New Machine Efficiency"? WG-9 special alloy steel liners can be thus renewed.
- 3 Are soundest basic engineering concepts followed? How do the valves operate? What about air passages? What is the truth about flywheel and pulley wheel combined?
- 4 Is overall design simple, accessible, yet built to eliminate the usual compressor readjustments? Sullivan users agree that Sullivan Compressors never need break-in adjustments and give least trouble of any.

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AIR COMPRESSORS FROM 1/2
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LINK-BELT Overhead TROLLEY CONVEYORS

In order to reduce manual handling to a minimum and speed up production, Link-Belt Overhead Trolley Conveyors were selected for this shell finishing plant in conjunction with "line" production methods. From the handling of the rough steel drop-forgings through to the handling of the finished painted shells, four separate Link-Belt trolley conveyors are employed.

Suspended from overhead, trolley conveyors save floor space, make ceilings or roof trusses pay dividends, and travel irregular paths at predetermined speeds to meet production requirements. Profit by Link-Belt's knowledge and experience. Send for Overhead Conveyor Book No. 1630.



Moving platform trucks of L.C.L. freight by Link-Belt Overhead Trolley Conveyor from loading to unloading station on dock of Pacific Freight Lines in Los Angeles.

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Trucks are moved automatically between stock rooms and shipping department by this Link-Belt Overhead Trolley Conveyor at the Los Angeles warehouse of Zellerbach Paper Company.



EDITORIAL COMMENT

Free Enterprise: What Is It?

MAN'S DESIRE to find his real economic identity lies at the heart of all post-war planning. So today we hear "free enterprise" proclaimed as the basis on which our post-war industrial structure must be built. But just what is "free enterprise? Some refreshing thinking on that question was put into words recently by Carleton Putnam, president, Chicago and Southern Air Lines, Inc. before the Houston Junior Chamber of Commerce. We quote excerpts as follows:

"One of the troubles with the phrase 'free enterprise' is that so few people agree on what it means. The shark grunts it while swallowing the minnows, and the minnows die with 'free enterprise' in their prayers. Personally, I would say that free enterprise prevails in a society where there exists the maximum possible number of independent business units compatible with the economic health of them all . . .

"The public interest of the passenger as a *traveler* might, in certain cases, be better served by having the whole country covered by one huge air line or railroad—it might even cost less—yet the interest of the passenger in the stimulating effect of competition on development and his interest as a *citizen* in living in a society where diversified opportunity for leadership in the air line or railroad business is open to him and his children, would then be entirely neglected. . . Of course, when we carry duplication of effort and facilities to the degree that the cost outruns the benefit, we have ridden a good horse to death and everyone suffers. This is particularly true in industries where we need units of substantial size to perform the service properly.

"I cannot stand idly by and listen to people talk about free enterprise as if it simply meant freedom for the biggest fish who gets there first to eat everything else in the pool. We business men are spending too much time today defending capitalism instead of finding out why we need to defend it . . . The elements that have made capitalism a dynamic force in the building of our America spring from certain rudimentary instincts in men's hearts—the instinct of personal adventure, the instinct of self fulfillment, the hunger to build and manage one's own shop. . . The airplane was not conceived in the laboratories of a great corporation. It was conceived in a two-man bicycle shop. . .

"It is just as dangerous to use the word 'competition' loosely as it is to use 'free enterprise' carelessly. How dearly our shark loves to swim in the warm inviting waters of competition! And how quickly he uses it to eliminate every atom of it that he possibly can! It is no exaggeration to say that uncontrolled competition in the first generation leads to very limited opportunity in the second generation, and to practically none in the third. In a mature society the government must referee the game.

"When we hear people complaining about the government destroying the 'free enterprise system, we must learn to distinguish between the screams of the resentful shark who sees his predatory instincts curbed, and the legitimate fears of those who may feel that the government is exercising too much control, or is trying to enter the game itself, instead of acting as umpire.

"I am filing no brief against the existence of large corporations. . . We often need them, but not them alone, because that is the final ceiling zero on our horizon of adventure. That is the shutting in of the fog at the end of our unrestricted competition day . . . Today a young man doesn't have free land beyond the Cimarron to give him his chance and his horizon of hope. This he must find within the existing economic structure. And nothing but an impartial government, acting as a referee, is available to give him that chance and that horizon. Unrestricted competition will not do it—through successive generations—now the open frontier is gone."

WESTERN INDUSTRY

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OUR COVER PICTURE

• Steel is the foundation on which heavy industry in the West is being built. Although the big war demand is for plates for shipbuilding, the new facilities in the West include structural mills also. Cover picture shows a close-up of one of three blast furnaces at the \$180,000,000 Geneva Steel Works in Utah now going into production. This is a continuous mill, the type which have in recent years come to dominate the steel industry, and is the only one of its kind west of the Mississippi. Also the most modern in the entire country.



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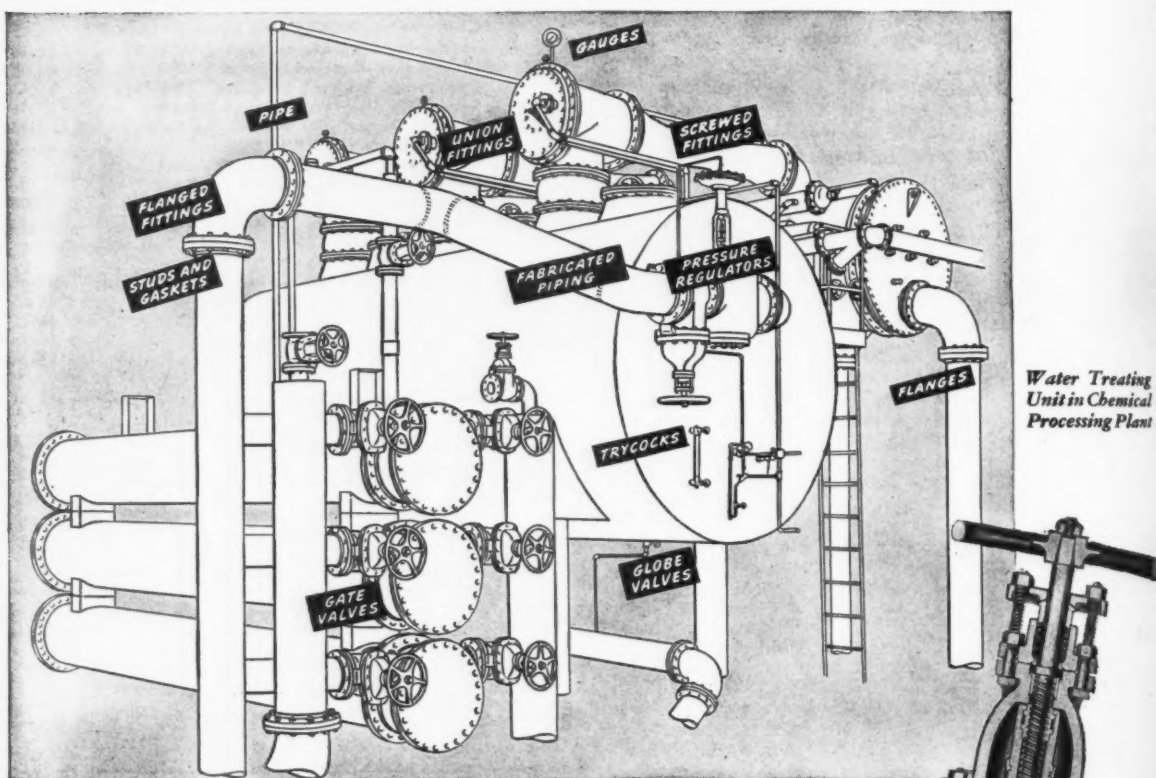
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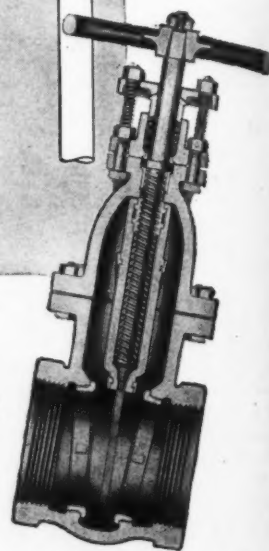


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Built for the word "GO"



"The rocket's red glare—bombs bursting in air"—immortal words from America's past, but words now sung more frequently than at any other time in our history. Today these words are accompanied by deadly weapons of war whose flawless performance assures success to our fighting men. How well these weapons work, however, depends on the degree of accuracy achieved in the manufacture of mating parts. For this give credit to those watchdogs of precision and accuracy—gages which guarantee perfect "GO" performance.

Kobe Master and Reference Gages are built to "go." Every scientific approach to

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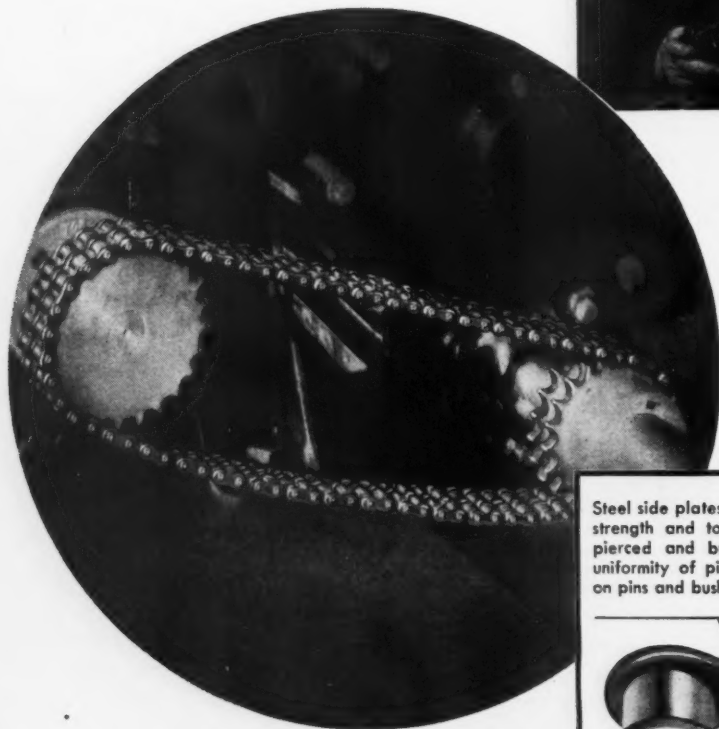
*Master and
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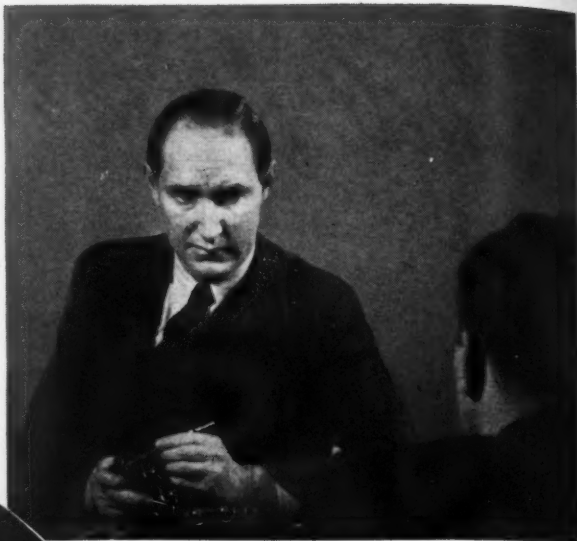
① **SMOOTH, STEADY POWER** is essential to the successful operation of many machines. And these Rex Roller chain belts deliver just that kind of power—quiet, positive power that keeps production on the move regardless of the type of service.



③ **THEY'RE BUILT FOR SERVICE.** Note how accurately the link is constructed. Rex Roller chain is a product of the highest quality workmanship and engineering experience—made of the best quality materials. It offers positive efficiency in transmitting power. For high-speed drives, for compactness, quiet operation and high efficiency, roller chain belt has no equal.

* * * *

Rex Roller chain belts are the answer to any problem involving the positive transmission of power and timing of operations. The Rex man can help you with your chain belt application problems. And for engineering data, ask for the 768-page catalog, No. 444. Chain Belt Company, 1723 West Bruce Street, Milwaukee, 4, Wisconsin.



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Steel cavern for a 600 mile wind

YOU ARE LOOKING into the throat of the highest-velocity* wind tunnel in the world. Air speed through the test chamber often reaches that of a bullet—about 600 miles per hour.

In order that aerodynamic research at this speed be valid, it is necessary that the tunnel itself—contours, supports, welds and surfaces—be made with unusual precision. Thus the structure, built for the

National Advisory Committee for Aeronautics, is tangible evidence of Consolidated Steel craftsmanship—the kind of work that has won and is rewinning every basic government industrial award. The kind of work, furthermore, that will be redevoted one day to the steel fabrication and construction needs of a peacetime America.

*As large as 16 foot throat diameter

BELOW is a rough overhead view of the high speed wind tunnel. Air is activated by two powerful fans at (A). Baffle plates (B) direct the motion and minimize turbulence. From a velocity of about 50 m.p.h. at (C), the air is pressed and drawn through the throat (D) at some 600 m.p.h. and returned to the fans for continued impetus.

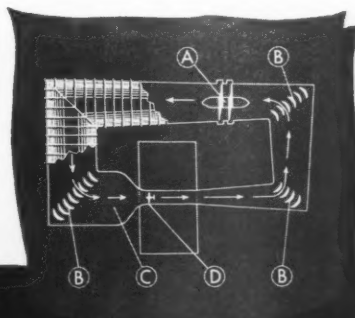


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Fluorescent operating hints

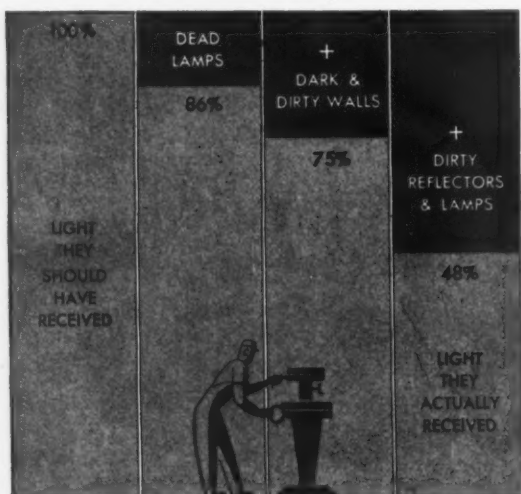
No. 3 of a series published by SYLVANIA for all users of fluorescent lighting



HOW TO GET THE LIGHT YOU PAY FOR

Observing a few simple operating rules can prevent waste of as much as 50 per cent of the fluorescent light you buy.

For example, here is the waste caused by improper maintenance in one typical plant:



Dead lamps left in fixtures rob this plant of 14% of the light that is being paid for—dark and dirty walls, of 11% more—dirty reflectors and lamps, of 27% more. Why get only half of the light that simple maintenance will bring you?

SCHEDULING MAINTENANCE SAVES DOLLARS IN LIGHT

Schedule regular checking and cleaning. All you need is a lightmeter.

Whenever the meter shows that you are receiving 25% less light than you should—it's time to check



for dead lamps, and to get out the soap and water. Attend to dead lamps first. Unless they are cut out of the circuit, they tend to overheat ballasts, wear out your starters, and waste electricity. But before you discard lamps, be sure the fault is not in the starters, ballasts, or circuit.

"TWO-MAN TEAM" MAINTENANCE METHOD

All you need to insure clean lamps and reflectors is plenty of soap and water—plus a *regular* maintenance schedule. The following two-man method has been proved very successful.



1. Two-man team begins work with one clean reflector previously removed from a fixture near the end of the cleaning route.



2. At first fixture on the route, man on ladder removes lamps and reflector, hands them down to man on floor in exchange for previously cleaned reflector. Ladder man then cleans housing, side panels, etc.



3. Ladder man secures clean reflector in place. (No hand tools are required with Captive Latches on Sylvania Industrial Fixtures). Man on floor wipes off the lamps and passes them back to ladder man.



4. Ladder man, with supply of Sylvania Starters, reinstalls cleaned lamps and sees that fixture is working properly.

5. Ladder man descends and puts ladder in place at next fixture. Meanwhile, man on floor washes and dries the first fixture and has it ready to replace soiled reflector in the next fixture.

Follow this procedure through entire installation.

HOW OFTEN?

Frequency of cleaning depends upon the location of installation and the type of work it lights. Air-filtered and air-conditioned rooms may require fixture cleaning only once in six months. But cleaning may be necessary every few weeks in a factory where the atmosphere is heavy with dust and oil. Be guided by your lightmeter in scheduling cleaning.

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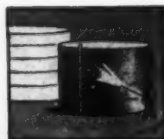
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The problem: To develop a gear grease heavy enough to withstand the tremendous pressures of the largest bull gears, yet fluid enough for ready application at normal temperatures.

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GEARITE answers successfully all the problems involved in lubricating open gears. Because it contains a solvent and thinner, GEARITE

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Since GEARITE needs no heating for use, it can be applied by various methods, such as drip-cup, direct pouring, spraying, or simply with an ordinary paintbrush. Gears should be cleaned of previous oils and greases, but good results can still be obtained when GEARITE is applied over old grease deposits—as the solvent tends to loosen and displace other matter. The solvent evaporates after application, leaving a strong, cushioning coat of protective grease uniformly spread over all of the metal.

GEARITE is highly adhesive and tacky. It resists squeezing out under

high pressures, or washing off in the presence of water. In service at low temperatures it does not harden and chip off. It will not "throw off." When machines are idle, it retains all its characteristics.



In addition, GEARITE contains a special black dye, making it easy to check the amount of grease on the gears. One can actually see it lubricate.

This unusual gear lubricant is typical of the care and research with which Union Oil Company—maker of 492 quality products—investigates and develops solutions to the lubrication problems of industry.

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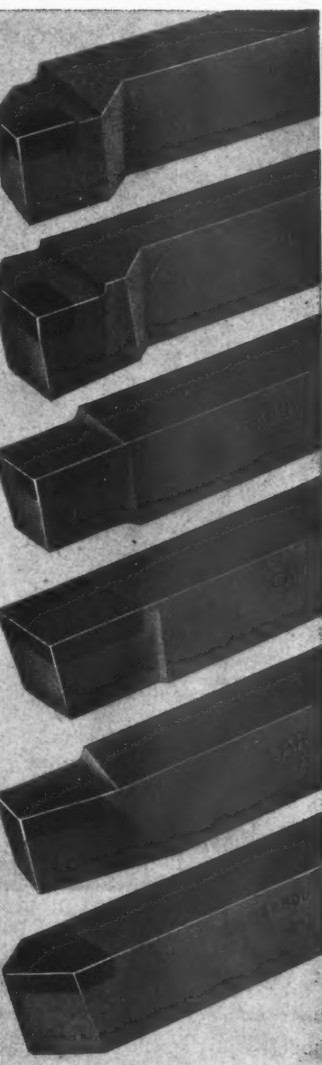
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WITH

Copperspun ROTOR

YOU can buy this new postwar designed Fairbanks-Morse motor now—*knowing* that it will be just as modern—just as efficient—just as up to the minute in years to come as it is today.

It is indeed a challenge to the future—in efficient motor design.

- It is a 40°C. motor.
- It is a protected motor!
- It has the most adaptable, convenient, and handiest conduit box you ever laid your eyes on!
- It has the famous Fairbanks-Morse COPPER-SPUN Rotor!

Important!

Never before has there been more stamina—more protection—more versatility built into a motor housing. A demonstration is necessary to fully appreciate how much this motor can really offer you. See it and judge for yourself.

Write Fairbanks, Morse & Co., 216 Fairbanks-Morse Bldg., Chicago 5, Ill.

FAIRBANKS-MORSE

DIESEL ENGINES
PUMPS
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GENERATORS

WATER SYSTEMS
SCALES
STOKERS
FARM EQUIPMENT
RAILROAD EQUIPMENT



Motors



Spotlight

on the NEWS

WESTERN INDUSTRY
FOR MAY, 1944

VOLUME IX

NUMBER 5

California Incomes Grow

Individual incomes in California for 1943 are estimated by the California State Chamber of Commerce as \$2,365,000 greater than in 1942. The net gain in population from April 1, 1940 to November 1, 1943, over and above 600,000 withdrawals for the armed services, was reported as 1,014,000.

Comparative income figures, in millions of dollars, are given below. Figures for 1939 and 1942 are from the Census Bureau, while those for 1943 are based on available indexes.

	1939	1942	Prelim'y Estimate 1943
Wages and salaries	\$3,050	\$6,093	\$8,000
Other labor income	351	295	290
Entrepreneurial income	750	1,341	1,800
Dividends, int., rents	897	1,006	1,010
Total	\$5,048	\$8,735	\$11,100

Dupont's Mystery Project

Although the huge DuPont project in eastern Washington is still very hush-hush, except that everyone in the Pacific Northwest and a dozen other states knows all about it and flocks of engineers and construction workers have quit the job in disgust at the living conditions and other unpleasant circumstances, some facts and figures are beginning to get into print.

Vice-chairman Joseph D. Keenan of the War Production Board issued an appeal for several thousand construction workers to go to Pasco "to work on an important war project" as follows: 4,000 unskilled laborers at a rate of \$1 an hour, 750 electrical workers at \$1.55 an hour, 750 millwrights at \$1.40 and 320 welders at \$1.20 to 1.62½ and 75 specialist welders at \$1.80 an hour.

Approximately 500,000 acres of land in the Hanford-White Bluffs-Richland re-

gion are involved, and Richland, with a population of 900 a year ago now has a population running into the thousands and is getting larger all the time. One contractor, A. J. Arany, is erecting 1300 prefabricated dwellings.

Calls for bids last year indicated an expenditure of \$500,000,000 or more for the project, the nature of which is secret.

Plywood Planes On Again

The Hughes-Kaiser plywood plane project, in which the government already has invested more than a million dollars, is on again. Secretary of Commerce Jesse Jones has authorized completion of the experimental cargo plane which had been ruled out a few weeks ago. Henry Kaiser had originally proposed building 500 big flying boats on an assembly line basis in shipyards and the government decided on three as a starter, which were being built at Howard Hughes' plant in Culver City, California, when the stop order was given recently.

Western Industrial Output

Increase in industrial output over 1939 in the 12th Federal Reserve District is reported by the Federal Reserve Bank for 24 out of 32 industries, shipbuilding, aircraft, glass containers, and steel ingots leading the list. The first ten, with their 1943 output expressed in percentages of 1939 volume, are as follows:

Shipbuilding (percentage of 1941).....	3988%
Aircraft	3313
Glass containers.....	254
Steel ingots.....	254
Canned vegetables	192
Zinc	171
Wool consumption	168
Smelting and refining.....	164
Copper	157
Coal	146

Grand Coulee Power Load

The greatest block of power ever to be developed in a month by any single plant, either steam or hydro generation, was produced during January at Grand Coulee dam where the huge generators produced 604,000,000 kilowatt hours of electrical energy, —an all-time world's record.

Installed capacity now exceeds 800,000 kilowatts, third largest in the world and second largest in the United States.

The number of kilowatts installed since February, 1943, about 475,000 kilowatts, is the equivalent of all the power units in Nebraska, or Oklahoma, or Louisiana.

15 Million For Reefers

Expenditure of nearly \$15,000,000 during 1944 for new refrigerator cars and repairs to its present rolling stock has been authorized for Pacific Fruit Express Company by its joint owners, Southern Pacific and Union Pacific railroads.

The program provides for purchase of 1000 new cars at an estimated cost of about \$5,500,000. It is hoped that delivery of much of this new equipment for transportation of perishable shipments will be completed this year to help handle an expected increase over PFE's all-time record of 411,000 cars loaded in 1943.

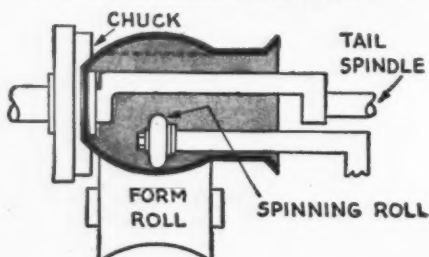
Biggest In Shipbuilding

San Francisco has become the world's largest shipbuilding center. Between June, 1940 and January of this year, contracts totaling \$3,031,107,000 have been awarded to shipbuilding firms in the San Francisco Bay area. San Francisco and Bay area firms also have received the highest total of facility contracts for any similar area in the West, amounting to \$636,303,000. Of this amount, \$349,989,000 was for industrial facilities and \$286,314,000 for military facilities.



STANDARD ENGINEERS NOTEBOOK

ESPECIALLY MADE FOR ALUMINUM
SPINNING, FORMING, TUBE BENDING



DE-GREASING FINISHED PARTS IS
UNNECESSARY—CAN BE REMOVED
WITH WARM WATER

Emulsifiable oil for metal-forming operations

Vapor de-greasing of finished parts in many metal-forming operations can now be eliminated by lubricating with Calol Soluble Oil H.V. This new product was developed especially for tube bending, aluminum-spinning operations and forming operations. Its viscosity is considerably higher than ordinary Calol Soluble Oil.

In services where a lighter oil is desired the viscosity can be lowered by adding a small amount of water. Unlike non-emulsifiable types, Calol Soluble Oil H.V. is easily removed from parts with water at a temperature of 90° F. or above.

This product is only one of a complete line of oils produced by Standard for forming, milling, cutting and other metal-working operations.

Conditions determine Chain Drive Lubricant

The type and condition of the chain, lubricating system used, degree of exposure to the elements and temperature are considered when selecting a Chain Drive Lubricant. Typical recommendations made by Standard of California are listed here in a handy chart form.

ROLLER AND BLOCK CHAINS

Operating Conditions

TEMP.	WORN OR SUBJECT TO DIRT DUST, WATER, ETC.
HIGH	Calol Pinion Grease O
MED.	Calol Roller Oil X
LOW	Calol Journal Oil 135
	CHAINS ENCLOSED
HIGH	Calol Journal Oil 165
MED.	Calol Journal Oil 135
LOW	Calol Journal Oil 35

SILENT CHAINS

TEMP.	CHAINS EXPOSED	
	WORN	NEW
HIGH	Calol Roller Oil X	Calol Jnl. Oil 135
MED.	Calol Jnl. Oil 135	Calol Jnl. Oil 35
LOW	Calol Jnl. Oil 35	Calol Jnl. Oil 25
	CHAINS ENCASED	
	OIL BATH	SPLASH
HIGH	Calol Jnl. Oil 135	Calol Jnl. Oil 35
MED.	Calol Jnl. Oil 25	Calol Jnl. Oil 25
LOW	Calol Jnl. Oil 25	Calol Jnl. Oil 14

STANDARD OF CALIFORNIA

CLOSEST COORDINATION NEEDED FOR THE BIG DRIVE ON TOKYO . .

Washington Must Stop Placing Pacific Coast War Production Contracts Without Regard For Timing If It Expects Results

MUCH remains to be done in coordinating the military and naval procurement plans for the Pacific Coast with the manpower situation.

The next few weeks should disclose whether the present hit-and-miss system of placing contracts from Washington without adequate check-up on Coast conditions is to continue, or whether top-flight army, navy and civilian agency men back there will get next to themselves and realize what confusion they are creating.

The great need is for Donald Nelson or others of equal or greater importance to come out to the West Coast and find out first-hand (not for a paratroop visit like Charles E. Wilson's last fall, but for a real study of the situation) or else for these same people to pay more attention to what the top men in government agencies on the Coast tell them, instead of relying on uninformed desk men in Washington for guidance.

Since James A. Folger and W. K. Hopkins, WPB and WMC directors for the Coast, blew their tops at Congressional hearings in San Francisco last month and told just what was happening, both have been called back to Washington. Out of

their trips may or may not come results. Entrusted with the job of coordinating production capacity with labor supply, both told the same story, that the first they heard of many of the biggest contracts was by reading the newspapers.

"Millions of dollars of construction have been placed on the Coast by the Army and Navy without any prior notification to either the Area Production Urgency Committee or the Manpower Priority Committees," said Mr. Folger, in amplifying his assertion that the West Coast Manpower Plan was threatening to break down because the original intent of the Byrnes directive to give local committees full information on which to base decisions is not being followed. "At the same time, through the operation of Directive No. 2 (which forbids placing war contracts in critical labor areas), many contracts are allowed to lapse, which, if subject to local investigation by the committees, would be found in the interests of the war effort to be allowed to be continued without adversely affecting the overall labor picture."

Said Bill Hopkins with equal vehemence:

"... the practice of the procurement

agencies, acting from their Washington headquarters, of disregarding the objectives of the Byrnes Directive and placing important contracts in this region without any reference to the Production Urgency Committees or to the War Manpower Commission, and I am permitted to say, to the War Production Board in this area.

"Contracts involving many millions of dollars and necessitating thousands of men in manning the construction jobs which they involve have within the past few weeks been placed in the Pacific Coast states. Relatively few of these contracts have been discussed with the committees and the government agencies concerned.

"In many instances the first knowledge which we in the War Manpower Commission, or in any of the committees, have had of such contracts has come from statements in the press or from some contractor who inquires relative to filling the needs for manpower to carry out the job. We have also found such information in construction papers and journals before any statement has been made to us by the procurement agency responsible for allotting the contract."

Pacific Coast chambers of commerce



* Labor supply can't be successfully yanked around from one spot to another, or from this industry to that.

joined in a statement last month that West Coast war production could be "measurably increased" if full use of productive facilities, manpower and management "know how" were permitted, which they said had been prevented by differing interpretations of directives of the Office of Mobilization and the War Production Board.

"Frequently these directives have been construed to mean that Pacific Coast plants should be summarily denied war and civilian work. This has made the manpower situation uncertain, and has resulted in the withholding of important work from the smaller plants able and willing to continue in the war effort."

The statement urged procurement agencies to keep local production urgency and manpower priority committees thoroughly informed.

The Coast men in the armed services, as well as the civilian agencies, are not responsible for the situation about which Mr. Folger and Mr. Hopkins complain. The fault lies back in Washington and must be remedied there.

Spotty Situation

This situation has not resulted in a uniform labor shortage everywhere. On the other hand, it has produced a spotty condition, with unemployment in some places, and shortages elsewhere, some plants overburdened with work, others standing idle. While it is obviously impossible to get a perfect balance, Washington cannot pooh-pooh away occurrences like the following:

M. B. Watson of the Harris Manufacturing Company, Stockton, California, told the Small Business Committee of the House that his contract for building truck cargo bodies for the Stockton Motor Base had been almost entirely cancelled on account of his being in a critical labor area, although Stockton is actually a No. 2 area. His plant is only working at 10 per cent capacity on these bodies, which instead are shipping out from some plant in the east, already assembled, using up space in already crowded freight trains, to be delivered at Stockton at a higher figure than the Harris company was offering for a delivered price from its plant only 14 miles away from the base. Harris delivered them on specially built trailers, already prepared for overseas shipment, whereas the eastern-built bodies were crated in lumber (the nation's No. 1 critical commodity) which had to be thrown away after the bodies were uncrated, and after arrival at the Stockton Motor Base, and bodies had to be prepared for overseas shipment.

J. O. Gantner, Jr., of Gantner & Matern, knitted wear manufacturers of San Francisco, told the same committee that such jobs as he was able to get from the Army had to be shipped back to Philadelphia for inspection at the quartermaster depot there, regardless of the ultimate destination of the shipment. The Navy, on the

other hand, was able to provide inspection right in San Francisco.

Elimination of the Los Angeles area from the critical labor list through instituting two 10-hour shifts in all of the harbor shipbuilding plants has been proposed by the Citizens Manpower Committee of that city, and a trend toward the 10-hour shifts is reported from Portland and other Coast cities, but the Maritime Commission ordered action to be deferred until the next conference of management, labor and governmental agencies at Portland May 1.

Huge Navy Program

To cope with the problem of getting enough labor for the \$60,000,000 to \$70,000,000 in military and \$100,000,000 to \$200,000,000 in naval installations in the southern California area, which might require 75,000 more construction workers, negotiations are being carried on between the armed forces and national headquarters of AFL and CIO for wholesale importation of men, to be lodged in temporary barracks.

When these installations are completed, probably 75 per cent of the operating force will be military and naval, with the remaining 25 per cent of civilians being supplied through government civil service channels.

The place where the draft will hurt the worst from now on appears to be in the prospective loss of supervisors, because new supervisors will have to be developed as well as ordinary workers.

Admiral Greenslade Key Man

Vice Admiral Greenslade, naval coordinator of logistics for the Pacific Coast, has been chosen also as coordinator of military staffs, and will be relieved of some of his present duties in order to free him for the job of welding the various military and naval branches into a working unit. It is expected he will organize a steering committee for that purpose.

Although many reports of surplus labor are heard, with contracts terminating and facilities idle, the overall situation, according to production urgency authorities, is one of labor shortage rather than surplus, because the idle facilities do not remain that way very long.

An example of new needs by the armed forces, in addition to the huge program of

shore installations at various points along the coast, is the demand for 155 mm. projectiles to outrange heavy German guns.

Some reports of idle facilities and surplus labor may be due to the fact that the government is buying much more close than before. A contract for a million duergares was offered in California and was begging for a long time, because garment manufacturers seemed to be more interested in items with a longer profit.

The government's policy in regard to reconversion was clearly stated in a recent address by Donald Nelson before the Atlanta Chamber of Commerce. (Editor's note: If the Pacific Coast is the crucial production spot of the country, why doesn't it rate a visit from Nelson?)

"From the standpoint of fairness, it would, of course, be ideal if all pre-war producers of a particular civilian product could be permitted to resume production at the same time and in amounts approximately equal to their peacetime production. But such a plan is a physical impossibility owing to the varying degrees to which companies are engaged in essential war work. The tremendous impact of war on the economy is bound to produce hardships for some business concerns, as well as for other elements in the society. Obviously the Government cannot entirely prevent such hardships.

"The controlling factor in laying down policy must be the interest of the public as a whole, rather than the protection of any one group. If, without interference with the war effort, we can give a manufacturer in a non-critical manpower area materials and parts to resume production of things the civilian economy needs, I think it is in the public interest that we do so without waiting until another concern in a critical area is permitted to resume production.

"Where military production is concerned, we cannot consult the convenience or the competitive interests of the firms involved. The only way that I can see to assure the most essential civilian production is similarly to fit each item into production schedules wherever it is possible to do so, even though the effects on competitive situations may be painful."

New Firms vs. Old

Regarding new competition, he said preventing it would be regimentation, but that the need for some controls obviously would continue for some time. During that period the so-called "new" firms should not be allocated materials and components until the established firms in the industry involved had received their just allocations, provided they were in a position to resume production of their former products. If the item were scarce, and the established manufacturers were not in a position to resume production, the new firm would be allowed to make it, if it did not interfere with war production.

UNDEVELOPED WESTERN MANUFACTURING

Comparison of what portion of the national output the eleven Western States consume with their output. Figures from U. S. Census of Manufacturers, assembled by Los Angeles Chamber of Commerce:

	Sold in the West 13.5%	Manufact'd in the West 1.5%
Radios	15	2.9
Electrical appliances	14.1	0
Wool carpets and rugs	16.7	4
Storage & primary batteries	15	8.2
Stoves, ranges, heaters	14.4	2.6
Builders hardware	15	2.6
Refrigerators	14.4	2.6
Hardware, iron & steel	10	5.5
Chemical products	12	1.6
Drugs and medicines		



THE OUTLOOK

FOR ALUMINUM IN THE WEST

By N. H. ENGLE, *Director*
Bureau of Business Research,
University of Washington*

MODERN warfare works miracles in industry as well as on the battle field. Aluminum is a choice example of the impact of war upon the development of a basic metal industry.

The aluminum industry of the United States was long confined to the East and South; not until 1939 was the West seriously considered as suitable for aluminum production. The reasons are inherent in the nature of basic requirements for aluminum production.

An electro-chemical industry, it was natural that the industry should center around Niagara Falls. While the location of the essential raw material, bauxite, in the South exerted a secondary influence on plant location, the availability of abundant, cheap electric energy was the dominant factor in aluminum reduction plant location.

Certainly this factor explains the movement of both Aluminum Company of America in 1939 and Reynolds Metals

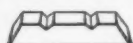
Company about a year later to the lower Columbia River, and the war born expansion of the Defense Plant Corporation's aluminum program to California, Oregon, and Washington.

An additional reason for the trek to the West, and one which should not be minimized, was the market potentialities in the western aircraft industry. The aircraft industry in particular influenced the establishment of the Spokane rolling mill, and the Phoenix, Arizona, extrusion plants, as well as other fabricating facilities.

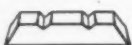
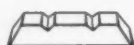
Moreover, since aircraft will continue to be in demand long after production of other types of aggressive armaments has

*Based upon "ALUMINUM, An Industrial Marketing Appraisal," by Engle, Gregory and Mosse, Bureau of Business Research, University of Washington.

ALUMINUM REDUCTION CAPACITY Western States compared with Pre-war United States

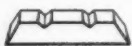
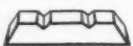
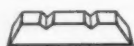
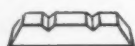


REPRESENTS 1 MILLION LBS.



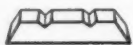
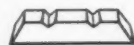
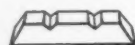
257 MILLION POUNDS

United States—1935 to 1939 Average



870

MILLION
POUNDS



Western States—1943

reached its zenith, western aluminum plants will no doubt be kept in full operation right up to the unconditional surrender of the last of our enemies. What will happen in the postwar depends upon many factors, some of which are of our own making, as we shall point out later.

An examination of the number of aluminum plants and their capacity as compared with the nation at large reveals the changes which the war has brought to the West. In 1943, the West had seven out of sixteen of the aluminum reduction plants in the United States. These plants, with 28 out of 75 pot lines, had capacity to produce some 870 million pounds of virgin aluminum annually, about 38 per cent of the nation's total. More significant for an appraisal of the future, is the fact that western aluminum plants, all of which have been built since 1939, now have approximately three and one-half times the average capacity of the United States before the war (1935-1939).

Aluminum reduction plants are located in each of the Pacific Coast states with heaviest concentration in the Pacific North-

west. Los Angeles, California, has one plant using Boulder Dam power; Riverbank, California, has another, about half as large, fed from the Hetch Hetchy development. Bonneville power supplies one plant at Troutdale, Oregon, and four Washington plants located at Vancouver, at Longview, on the lower Columbia, at Spokane, and at Tacoma. (See accompanying table.)

All of these plants but two are owned by the United States government. All but one of the government plants are operated for the government by the Aluminum Company of America, the Olin Corporation of Tacoma being the exception. Two of the plants, that of Reynolds at Longview, Washington, and that operated for D. P. C. by the Olin Corporation at Tacoma, use the Soderburg continuous anode process, while the remaining five plants utilize the more common pre-bake method for producing anodes for the pots. It is claimed that somewhat higher purity of the virgin aluminum can be had by the Soderburg process, although all of the western

plants have turned out exceptionally pure metal.

Aluminum is produced exclusively from bauxite in all United States plants. Experiments are under way in the West to test ways and means to extract alumina from alunite and clay. Most advanced of these projects is the D. P. C. plant at Salt Lake City, Utah, operated by Kalunite, Incorporated, an affiliate of the Olin Corporation of East Alton, Ill.

This company is testing in a commercial pilot-plant the feasibility of refining Utah alunite. Thus far the plant has not succeeded in producing alumina pure enough for use in reduction pots. However, the plant was not completed until the latter part of 1943, and it will probably take some time to secure successful operations. If the project is a success, it is intended that the Utah plant will supply the Tacoma reduction works with alumina.

The second testing project is a commercial pilot-plant now under construction at Salem, Oregon, designed to produce alumina from Oregon and Washington clays. Financed by the D.P.C., this plant is being built by the Chemical Construction Company, an affiliate of American Cyanamid, for Columbia Metals, a Seattle, Washington corporation.

Two alternatives face the aluminum industry of the West from the production standpoint alone. Either a workable process for extracting alumina from local materials must be found or steps must be taken to secure a bauxite refining plant and sources of bauxite supply. The secret of separating pure aluminum oxide from clays and other raw materials will doubtless yield to man's ingenuity in time, but the hard fact to face today is that no economical process has yet been evolved, and it has not been for lack of trying. Experiments abroad with other raw materials are reputed to have met with but indifferent success.

Those interested in retaining an aluminum industry in the West therefore, must

Location, Capacity, and Ownership of Western Aluminum Reduction Works

Location	Capacity—		Owner	Operator
	Pot Lines	Million Lbs.		
Washington	16	486		
Longview	3	72	Reynolds	Reynolds
Spokane	6	192	D.P.C.	Alcoa
Tacoma	2	42	D.P.C.	Olin
Vancouver	5	180	Alcoa	Alcoa
Oregon	4	128		
Troutdale	4	128	D.P.C.	Alcoa
California	8	256		
Los Angeles	5	160	D.P.C.	Alcoa
Riverbank	3	96	D.P.C.	Alcoa
Total	28	870		

Estimated Postwar Cost of Production of Virgin Aluminum by Plants

No. of Plants	Regional Location	Capacity (million pounds)	Avg. cost of Production (\$ per lb.)
4	Pacific Northwest Tidewater (a)	422	11.37
2	Massena & Niagara Falls, N.Y. (b)	225	11.73
2	Alcoa, Tenn. and Badin, N.C. (b)	510	12.18
1	Spokane, Washington (c)	192	12.43
1	Listerhill, Alabama (d)	120	12.98
1	Los Angeles, California (c)	160	13.11
1	Riverbank, California (c)	96	13.54
1	Jones Mill, Arkansas (c)	128	14.97
3	New York and New Jersey (c)	448	15.71

(a) Alcoa, Reynolds and D.P.C. owned.

(b) Alcoa owned.

(c) D.P.C. owned.

(d) Reynolds owned.

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• Alumina (above) is a whitish powder derived from bauxite, delivered in box cars, withdrawn by large suction hoses into holding bins, processed in large pots or cells through which electric current passes. Scene at Aluminum Corporation's Treutdale Works. (Below) Opening vent hole in reduction pot, Reynolds Metals Company plant.

take positive steps to free the industry from dependence on alumina from the Gulf Coast or the Mississippi Valley, with its handicap of \$8 to \$12 a ton in freight charges. A large modern Bayer process plant for refining Southwest Pacific bauxite, which exists in large quantities, of the right quality, and at low prices, should be sought without delay. While it is doubtful that such a plant could be had before the war ends, immediate plans should be made, in detail, for its prompt installation and operation after the war.

A preliminary step might be the importation and stockpiling of bauxite from Japanese mandated islands as fast as they are freed. Bauxite is known to lie in Ponape, one of the islands recently come into our possession. Returning cargo ships from the war zone might load with this strategic material.

Since the United States has practically exhausted domestic supplies of bauxite, such action would be in line with essential national policy for implementation of Article IV of the Atlantic Charter. After the war enough of the world's vast reserves of bauxite must be secured for United States plants or we will have no aluminum industry, pending such indefinite time as may be necessary to unlock the secret of



g. cost of
roduction
per lb.)
11.37
11.73
12.18
12.43
12.98
13.11
13.54
14.97
15.71

ay, 1944



• CARBOLOY TOOL MAKING. A section of the machine shop at the aluminum rolling mill of Aluminum Corporation of America near Spokane is devoted to this work. Here is seen one of the women employees engaged in operating the rotary surface grinder.

getting alumina from other raw materials.

Assuming that the United States will work out a solution to the raw material problem, the future of the aluminum industry becomes a question of markets. Based on a nation wide survey of the potential consumption of aluminum after the war by a cross section of industrial consumers, it appears probable that the demand for aluminum in the United States may reach 1,500 million pounds by the fifth year after the war, assuming a price of 15 cents per pound for virgin aluminum and assuming that high-level production, employment, and consumption can be achieved.

Should the price fall to 13 cents, the total demand may reach 1,700 million pounds, while at 10 cents 2 billion pounds might be taken. Of these totals about 40 per cent is expected to be for secondary aluminum, leaving the market for virgin metal at 900 million pounds at 15 cents, 1,020 million pounds at 13 cents, and 1,200 million at 10 cents. Price may fall to 13 cents a pound since, at that level, most of the high-cost plants will be eliminated and demand and supply brought nearer together.

The national market may be roughly divided as follows:

New England and Mid. Atlantic Sts.....	30-35%
Southeast	1-3
Pacific Northwest	1-3
Southwest	5-7
Midwest	53-62

Thus if the total demand is for 1,500 million pounds, at 15 cents a pound for virgin metal, the market may approximate the following:

	— (Million pounds) —		
	Total	Primary	Secondary
United States	1,500	900	600
Northeast	450-525	270-315	180-210
Southeast	15-45	9-27	6-18
Pacific N.W.	15-45	9-45	6-18
Southwest	75-105	45-63	30-42
Midwest	795-930	477-558	318-372

From the foregoing tabulation it is clear that if western aluminum plants are to continue in operation after the war, markets abroad and in other parts of the United States must be developed, since three pot lines or only ten per cent of the present western capacity would be sufficient to supply the entire West with primary metal.

The competitive strength of western production is determined by its cost of production as compared with other producers. On this basis Pacific Northwest tidewater plants have a decided potential advantage over all other aluminum reduction plants in the United States. Assuming an alumina plant on the lower Columbia River, with other costs scaled down but

little from present war levels, we find Pacific Northwest tidewater plants heading the list of low-cost plants (see accompanying table).

Should further cost economies become realities after the war because of certain favorable factors in the Northwest, the tidewater plants in this region might even reduce costs below 9 cents per pound or close to the reputed level of the Canadian plant at Shipsaw. The following computation carefully worked out from a computation of known facts illustrates what might become competitive international costs after the war.

Cost Items	Pacific N.W. (short ton)	Shipsaw (short ton)
Alumina	\$58.50	\$80.00
Carbon (materials only)	11.13	12.00
Electrolyte (cryolite)	10.50	11.00
Electric energy	28.50	10.00
Wages	26.80	18.00
Administrat'n and selling	20.00	21.50
Amortization and interest	10.42
Miscellaneous costs	7.50	7.50
Total per short ton	\$173.35	\$160.00
Cost per pound	8.67¢	8.00¢

The foregoing cost analysis indicates that the Pacific Northwest has very sound reasons for anticipating a permanent and flourishing aluminum industry. Even the less well located Spokane plant ranks among the eight lower cost plants of the nation.

An analysis of delivered costs to market centers in the East and Midwest reveals that Northwest tidewater plants have potentially lowest costs of any plants in the United States. Assuming 15 cents a pound for virgin aluminum f. o. b. New York and Chicago the following differentials or gross profit margins per ton of aluminum above cost appear probable.

Reduction Plant	New York	Chicago
Pacific Northwest tidewater	\$48.68	\$46.86
Niagara Falls, New York	42.93	44.42
Massena, New York	40.73	44.13
Alcoa, Tennessee	29.03	30.43
Spokane, Washington	21.27	21.65
Torrance, California	19.69	13.94
Listerhill, Alabama	15.35	13.20

Two problems must be solved before the West can realize its expectations for a light metals industry. The first has been mentioned, namely, the need for a Bayer process alumina plant. The second is the necessity that government owned plants be put

Production, Imports, Exports, and Apparent Consumption of Primary Aluminum and Production of Secondary Aluminum in the United States, 1939-43

Year	PRIMARY ALUMINUM			SECONDARY ALUMINUM		
	Production (Short Tons)	Value (Million \$)	Imports (Short Tons)	Exports (Short Tons)	Apparent Consumption① (Short Tons)	Value② (Million \$)
1939	163,545	\$ 64,600,000	9,290	36,632	167,646	53,947
1940	206,280	75,292,000	17,435	26,886	227,017	80,362
1941	309,067	100,395,000	13,358	7,405	302,788	106,857
1942	521,106	151,371,000	③	④	588,522	198,492
1943	920,179	265,380,000	③	④	959,600④	260,500④

① Data not available on fluctuations in consumers' stocks. Withdrawals from producers' stocks totaled 31,443 short tons in 1939 and 30,188 in 1940; additions to producers' stocks totaled 12,232 in 1941, 5,502 in 1942, and 60,787 in 1943.

② Based upon average price of primary aluminum as reported to the Bureau of Mines.

③ Data on imports and exports for 1942 and 1943 may not be released under censorship regulations.

④ Preliminary.

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chased for operation by private companies.

If well financed companies with adequate *know-how* can arrange to take over from the Defense Plant Corporation enough plants to provide a well integrated aluminum industry, the West, and particularly the Pacific Northwest, will be in a strong position to become one of the light-metal centers of the world.

Low-cost aluminum, low-cost electric energy, and the presence of thousands of skilled light-metals workers should provide a sound foundation for a great new western industry after the war.

* * *

Production of primary aluminum in 1943 totaled 920,179 short tons, exceeding the previous peak reached in 1942 by nearly 77 per cent, according to the Bureau of Mines, United States Department of the Interior. The 1943 output was valued at \$265,380,000 and compares with 521,106

tons in 1942 valued at \$151,371,000 and 309,067 tons in 1941 valued at \$100,395,000.

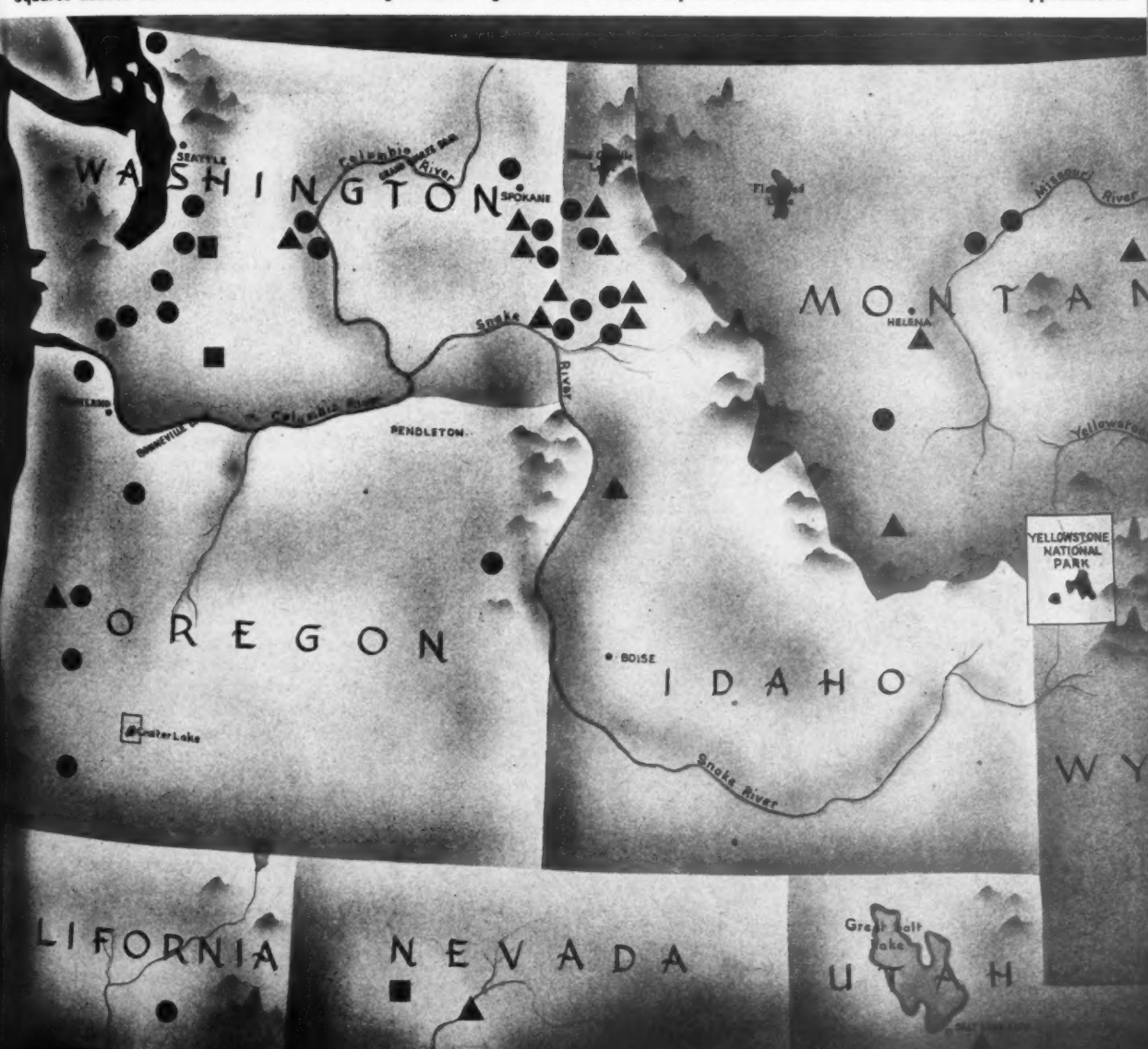
Apparent domestic consumption of primary aluminum in 1943 totaled an estimated 959,600 tons and compares with 588,522 tons in 1942, and 302,788 tons in 1941. Of the primary and secondary aluminum consumed in the form of fabricated products, about 70 per cent went into aircraft construction in airframes, landing gear, engines, propellers, and fittings. The bulk of the remainder was consumed in ship construction, tank and truck engines, ordnance, and other military uses, while only a minimum of essential civilian needs were met.

The 920,179 short tons of new aluminum produced in the United States in 1943 was contributed by the Aluminum Company of America, Reynolds Metals Co., and the Olin Corporation. More than half the reduction capacity operated by Alumi-

num Company of America during 1943 and the entire capacity operated by the Olin Corporation was owned by the Government in the name of the Defense Plant Corporation.

During the year all primary production facilities were completed and in operation except for three completed potlines on the West Coast which were not started owing to a labor shortage. In the latter part of 1943 production exceeded consumption, resulting in an unbalanced supply-use pattern. To bring production more nearly into line with consumption, 15 potlines representing approximately 14 per cent of the Nation's productive capacity were closed down in late 1943 and early 1944. All the potlines closed were in eastern plants and their closing helped relieve the shortage of coal in the eastern states. Production of alumina also has been sharply reduced to conform with the curtailed aluminum in-got output.

• RAW MATERIALS SOURCES. Dots on this map of the Pacific Northwest indicate location of occurrences of refractory clays. Squares denote occurrences of alunite. Triangles mark regions where china clay is found. Data for these materials is approximate.



Oakland Naval Depot Has New Systems For Materials Handling

THROUGH the Package and Materials Handling Program of the Navy Bureau of Supplies and Accounts we have speeded up considerably the handling, storing and shipping of the tremendous quantity of material flowing through the United States Naval Coastal Supply Depot at Oakland, the largest depot of its kind in the world today.

A rapidly expanding fleet and an ever increasing number of advanced naval bases call for the utilization of every practicable idea in materials handling. Not only have we and other naval supply depots adopted many of the methods employed by our larger industries, but we also make awards of \$25 to \$200 to the civilian naval personnel for beneficial suggestions. Many of our most important improvements have come from that source.

For many years prior to our country's entry into the war, rigid specifications for the packaging and shipping of goods were set up by this nation's large industrial plants. The Navy has adopted many of these, notably the fork-truck-pallet system and has experimented with it considerably.

At the present time equipment arrives at the Naval Supply Depot at Oakland on standardized pallets, thereby speeding unloading, storing and reshipment, with a

By LIEUT. JOHN J. WILEY, USNR
Public Relations Officer,
Naval Supply Depot, Oakland, California

reduction of man-power and time. The dimensions of these pallets are determined by many factors. The size of the items to be packed, weight of the material, center of gravity of load, and the mode of transportation involved between the factory and the depot, all have to be taken into consideration. It has been found that pallets 48x48 in. are satisfactory for moving most types of material.

Modern American industrial ingenuity has devised methods of palletizing certain kinds of war material heretofore considered out of the question, and some of the solutions worked out at the Naval Supply Depot at Oakland for the palletizing of special commodities are mentioned in this article.

Among the accompanying photographs there can be seen the method used in palletizing small rolling stock. These pallets can be easily and safely piled four high. Rolling stock, such as hand trucks, are difficult to stack by hand on the deck and it has only been found possible to store these one high. The saving of space and time in

STANDARDIZED NAVY PALLET SPECIFICATIONS

Lumber: Oak, maple, hickory, birch, beech, ash, elm, cherry and pecan; sound, square edges, any stage of seasoning.

Top Deck: Two end boards 1x6 in. or wider and surfaced on one side to $\frac{7}{8}$ in. Other boards 1x4 in. and wider, surfaced one side to $\frac{7}{8}$ in. Spacing between boards must not exceed $\frac{1}{2}$ in. Surfaced side of boards must be up.

Bottom Deck: Two end boards 1x6 in. surfaced one side to $\frac{7}{8}$ in. Other boards 1x4 in. and wider, surfaced on one side to $\frac{7}{8}$ in. Space between outside boards and next inner boards to be 7 in. Surfaced side of boards to be down.

Stringers: Three 2x4x48 in., surfaced two edges to not less than $\frac{3}{4}$ in. Stringers to be set in $\frac{3}{2}$ in. from side.

Nails: No. 6— $2\frac{1}{2}$ in. cement-coated drive screw nails only to be used in holes drilled in boards with proper size bit. Drilling is not necessarily required but splits because of nailing will not be acceptable. Two nails to be used in 4 to 6 in. boards. In wider boards space nails at 2 in. intervals.

Note: Stagger nails off center line to avoid splitting stringers. Chamfer outside top edge on both outside bottom boards for easy entry of truck forks.

handling palletized rolling stock with fork trucks is evident.

Another method employed at this depot is the use of pallets in handling gas cylinders. The stringers are made from pieces of 2x4x48 in., cut to the same radius as the dimensions of the cylinder to be stored. Most gas cylinders can be placed five in a row, but the size of acetylene cylinders permits only four to be placed in this manner.

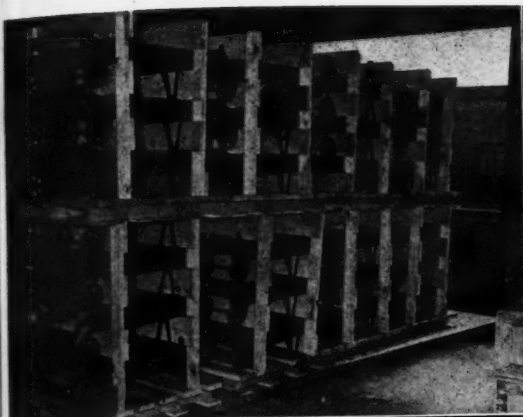
All cylinders on the depot are placed on these pallets when received and are not handled again until the pallet is discharged in the ship. Where the cylinders remain palletized until reaching their final destination, steel straps are passed through the pallet and over the cylinders in order to secure them to the pallet itself. It is interesting to note that this method of stowage increases the storage capacity of the floor space by 200 per cent.

In a continual search for labor saving devices at the Naval Supply Depot, the system of palletizing war material is being thoroughly studied. As may be seen in the accompanying photographs, the picture frame type of pallet has been developed in order to provide means of palletizing soft or irregular shaped items that cannot otherwise be handled efficiently.

Where large quantities of brooms are to be stored, they are stacked on their respective pallets four high. In this way 64 bundles of brooms may be stored in an area formerly capable of taking only 44 bundles. By using pallets for the storage of tires, the storage capacity of the square feet has been increased by 30 per cent. Any irregular shaped items, such as shovels and mops



* Barge loading platform removes such troubles as tides and tight corners, enables loading palletized materials into a covered barge at the rate of 25 tons an hour.



• **NEW UTILIZATIONS OF PALLETS.** Examples to be found at the Oakland Naval Supply Depot. Saving of space and time in handling palletized rolling stock (upper left) is evident. Picture frame type of pallet (upper right) enables 64 bundles of shovels to be stored in an area formerly capable of taking only 44 bundles. By using pallets for the storage of tires (lower left), the storage capacity is increased 30 per cent. Pallet method of stowing cylinders (lower right) increases storage capacity of floor space by 200 per cent.

or soft items like bailed mattresses, rubber hose and life jackets, can be palletized by using the picture frame type of pallet.

The frames are made from 2x4 in. lumber, surfaced four sides with 1x6 in. cross members. The frames are not secured to the pallets and can be easily removed by pulling the nails of the cross members. At the Naval Supply Depot, a 4x4 in. pallet is used with a 4-in. lip. This type of pallet is commonly called a lip board. The prime purpose of the lip is to permit the bar sling of a ship's bridle to be placed under the top deck.

Two picture frames, one on either side, are forced under the lip. The cross member is then placed diagonally across either end and lightly nailed, the nail heads being allowed to protrude about a quarter of an inch to facilitate their removal. The frames

will, of course, vary in size depending upon the item to be stored, the height of the storage space and how high it is possible for the fingers of the fork truck to go.

Another example of how fork trucks and pallets have been put to work at the Naval Supply Depot may be seen in the accompanying photographs of a barge loading platform. This idea was developed by one of the depot's civilian employees for the purpose of loading barges by the use of two fork trucks working together, one on the dock, the other on the barge. The platform is made of two-inch oak and is anchored to the stringer.

The truck is placed on the barge by means of a ramp or a mobile crane, depending upon the state of the tide, and the loaded pallet is then picked up on the pier and placed upon the platform. The

truck in the barge picks up the same pallet from the platform and stows it in the barge. The material is not removed from the pallet until it is discharged into a ship, either at another pier or out in the stream, at which time the empty pallets are returned to the depot.

Uniform cases, such as provisions, can be loaded in a covered barge at the rate of 25 tons per hour, with three fork trucks and one laborer. Two trucks are generally used on the pier and one in the barge. Drummed oil can be loaded in an open lighter at 65 tons per hour; plunder (i.e., miscellaneous items) at 20 tons per hour. No accurate figures on loading by hand and roller conveyors are available but it is doubtful whether the rate of loading would exceed one and one-half tons per man

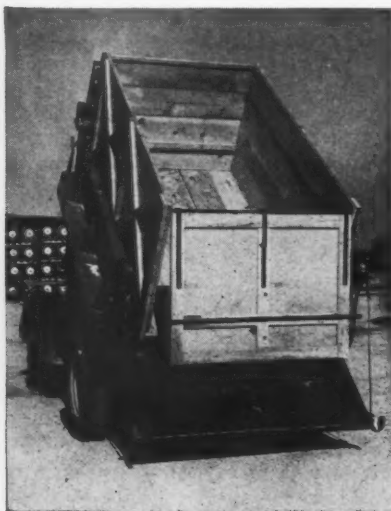


• By merely lengthening the trailer tongue, the lumber is kept clear of the tow car, thereby eliminating the necessity of using two trailers. The device is simplicity itself.

hour, compared to the six tons per man hour required when loading by fork truck.

It is true that considerable space is lost in pallet loading. A 20,000 cubic foot capacity barge will take approximately 15,000 cubic feet of cargo loaded in the conventional manner, as against 12,000 cubic feet loaded on pallets. Nevertheless, the tremendous saving in man hours more than offsets the loss in space and depreciation of equipment.

Another idea submitted to and accepted by the Beneficial Suggestions Committee at the depot involves the transporting of large quantities of lumber from one section of the depot to another. In order to eliminate the towing of two industrial trailers, instead of one, when handling box and crate lumber, the tongue of each trailer has been lengthened from 3 ft. 6 in. to 7 ft.



• Refuse container saves much hand labor. It is secured to the dump truck by using two cleats and a chain at the forward end.

6 in. In this way it is possible to maintain a perfect center of gravity at the same time the lumber is kept clear of the towing car. Each truck has also been equipped with lumber rollers, thereby enabling the supply to be dumped where required with little effort.

A new method of refuse handling has been adopted, the idea being submitted to the committee by one of the civilian naval personnel. As may be clearly seen in the accompanying photograph, large wooden containers have been built in a size suitable for use with a regular dump truck. Each box is equipped with rollers and a hinged end. The dump truck makes its daily round stopping at points where refuse accumulates and substitutes an empty container for the one already filled. The box is secured to the inside of the truck by means of two cleats and a chain at the forward end.

Claims Far Less

Utah's unemployment compensation claims for 1943 were only \$99,570, compared with \$996,000 paid claimants in 1942, and there were only 176 claimants last year who drew the full amount of benefits to which they were entitled under the law, compared with 2,499 in the previous year. Very few of the 10,500 workers laid off when the Remington Arms plant in Salt Lake City closed last December filed unemployment compensation claims.

Stockton Yard Activity Continues

Contracts recently awarded insure another year of activity in at least four of the ten shipyards at Stockton, Calif.

The Pollock-Stockton yards will build 46 craft of different types, including float-

ing drydocks, steel and wooden cargo barges and troop barges.

Stephen Bros. Boat Works has a contract to build 33 rescue-type ships.

The Moore Equipment Co. has a continuing contract with the Navy to build invasion barges.

The Colberg Bros. plant is working on a contract for three purse seiners, costing \$200,000.

The Clyde W. Wood Co. is 75 per cent along on its government contract and has started building six small fishing boats.

Salvage Drives

Plans for speeding waste paper and other waste materials collections in homes, offices and war plants in the Western states were mapped at a conference in San Francisco last month of WPB salvage chiefs called by Eric Marks, chief of the WPB General Salvage Branch. Not only is waste paper to be salvaged from war plants themselves, but the aid of the workers is being enlisted in carrying the salvage idea into their own homes. Tom Hoyt, deputy director of WPB salvage, was also present from Washington, and William F. Breuer, regional salvage manager, presided.

Overworking Women

Found guilty of employing women 12 hours per day in violation of the state law, the proprietor of a San Francisco printing establishment was given a suspended sentence of ten days in jail by the San Francisco Municipal Court. The defendant had been denied a War Production Permit for which he had applied to allow him to employ female workers 12 hours per day. Despite this denial, the employer continued to work his female employees long hours.

Coulee Dam Traffic

Water transportation on the 151-mile reservoir behind Grand Coulee Dam will be linked up with transportation by rail, as the U. S. Reclamation Bureau has granted the Great Northern Railway Company a lease to construct and operate a short spur track, on government-owned land near Kettle Falls, 100 miles above the dam, from an existing line to the water's edge. Lumber, a critical war commodity, will comprise the bulk of proposed rail-water shipments.

Contract for Generators

Green light for immediate production of a large number of new type Diesel-generating plants has been given the Joshua Hendy Iron Works by the Maritime Commission. Units are scheduled off the production line at the rate of 22 per month by the end of the year. They are for use on the AV-1 type of Maritime Commission ships and provide electric current for general ship-board services.

Company Manual Will Beat Keeping it Under Your Hat . . .

Now go, write it before them in a table, and note it in a book.—Isaiah, Chap. 30, Verse 8.

By Arthur V. Chester

THE lines quoted from the wisdom of the Old Testament apply most significantly to modern industry, and especially to Western industry, that young giant who has come to full maturity in the last few years.

An industrialist who looks forward to vigorous, successful enterprise after the war can scarcely afford to ignore the need for a book in which the objectives of his organization are set forth, the line of authority defined, and each employee furnished with a written account of the responsibilities and duties connected with his job.

Many companies have such manuals; many are without them. A percentage of manufacturers engaged in production for military purposes believe that the writing of manuals can be put off until after the war. They say that present policies, procedures and methods will be changed or abandoned with the firing of the last shot.

To some extent, this is undeniably true; however, the manufacturer's equipment and machinery will not be scrapped altogether but merely diverted into the channels of producing goods for public consumption; and if a job or function is to be eliminated, a loose-leaf manual can be amended quickly and inexpensively.

There are advantages to be gained through the preparation of a Book of Pro-

cedures which far outweigh such minor considerations. Some of these benefits are:

1. Company operations are clarified.
2. Overlapping functions are eliminated.
3. Functions which have been slighted or ignored are identified and assigned to specific employees.
4. The individual worker is encouraged to think about his job from many angles that have not occurred to him previously.
5. Authority is defined, delegated and officially proclaimed.
6. Every employee knows exactly what is expected of him.
7. Operations are streamlined to meet the possibility of "cut-backs" in war contracts.
8. Management is in possession of a blueprint which may be used to plan production for peace without the delay of analyzing jobs and machines during the uncertainty and confusion that may follow a sudden end of war.

Some of the points listed above may be illustrated by quoting from the manual of one well-regulated company in Southern California. The section quoted is part of a job specification and the job selected is one with which almost everyone is more or less familiar.

The duties of a buyer are not mysterious. What does he do? A one-word description would be true. Buy. However, it would not be complete for the purpose of a company manual of procedures.

The buyers of this company purchase goods from manufacturers for re-sale to

customers who fall into the following broad classifications:

- a. Chain retail stores
- b. Independent retail stores
- c. Industrialists manufacturing for military purposes
- d. Industrialists producing civilian goods
- e. Building contractors

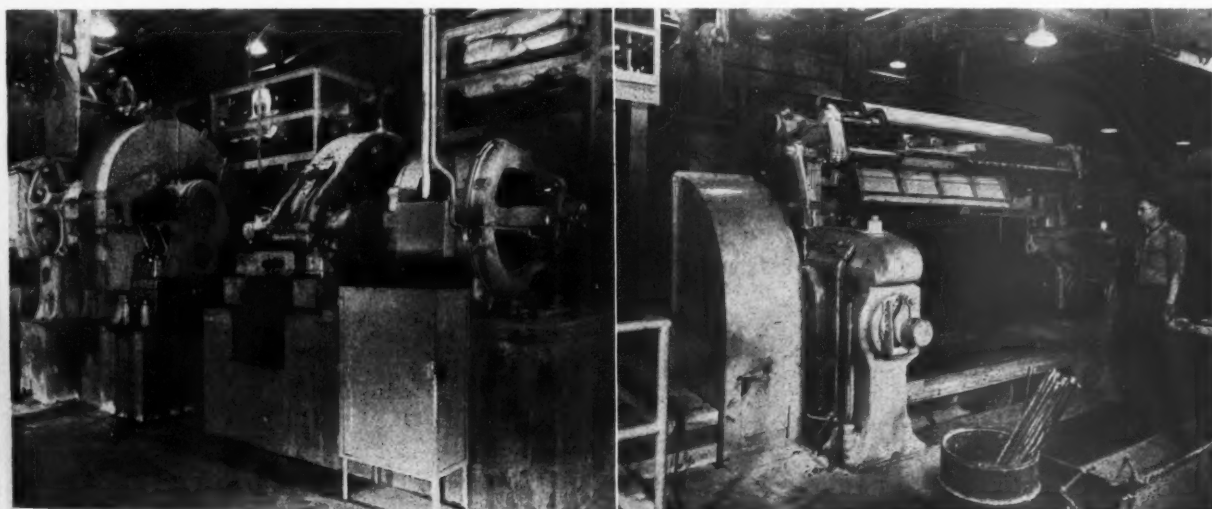
Before the preparation of the company manual, each buyer used any methods and procedures that he thought best. As one of the buyers said: "I have it all in my head." This may have been quite true, yet an examination of the following points, quoted from the manual, may well cast doubt upon such statement. These quotations are not literal.

As a preface, it should be made clear that each item carried by the company is described on a file card, which contains information about the weight, dimensions, material of which the item is made, and details about the last purchase made, price, terms, shipping schedules, the name of the firm that supplied the item, address, telephone number and the name of the individual contacted.

In addition, the names of competitive firms, if any, are listed. If such lists are long, they are not placed on the cards, but the cards do include reference to catalogues or files which contain such information.

"The buyer shall consider the following points before making purchasing commitments:

(Continued on Page 30)



• Banbury mixer (left) installed at United States Rubber Company factory at Los Angeles, showing power unit which propels steel fins inside the mill. These fins knead the rubber and work accelerating compounds into it. After this process the rubber is cooled and then goes to 84-inch mixing mills, one of which is shown at the right, for further warm-up and working. United States Rubber Company has taken the first step in an expansion program which, when completed, will almost double the capacity of its Los Angeles plant, of which John M. Miller is manager.

COMPANY MANUAL (From Page 29)

Financial

1. Ratio of money spent annually on the item to the total company purchasing budget.
2. Rate of annual turn-over of the item.
3. Percentage of profit yielded by the item, in ratio to the average percentage set by the company for all items.
4. Rate of annual turnover of this item compared to rate of annual turn-over set by the Cost Department.

Receiving, Storing and Shipping

1. Is the item fragile? Liable to damage if dropped? If turned upside-down on sideways? Will it deteriorate in stock because of rust, rot, corrosion, chemical change, dryness, moisture, heat, cold, drafts, sagging, loss of resilience?
2. Does it require special re-packing, with extra costs of material and labor? Or special inspection before shipping to customers?
3. Is it costly to count, check, weigh?
4. What is the ratio of storage space required for the item compared to total storage space available in company warehouse?

Sales

1. How many classifications of company customers use the item?
2. Are such customers, as a group, desirable credit risks?
3. Are they likely to be permanent customers? If not, are permanent customers being neglected in order that this type of trade shall be pursued?
4. What expense is involved in advertising, selling and servicing the item? What is the ratio of such expense to all monies spent by the company Sales Department?

Forecasting

1. What effect on the item's value would result from a sudden end of the European war? Of both European and Asiatic wars? Consider this problem from the customer's viewpoint also. Obviously, if our customers are loaded with military products after the war, an undesirable credit situation may develop. Therefore, the buyer shall take into account:
 - a. Is the item useful for war purposes only?
 - b. What expense would its conversion to peace-time use involve?
2. How will the value of the item be affected by probable changes in design? By new materials, plastics, etc.? By abandonment of the functions performed by the item through changes in public psychology?

No one will deny that every capable buyer takes all these factors into consideration at times. But does he conscientiously follow a long mental check-list unless it is placed before him in written form, with the caution that he is to be held responsible for the full weighing of all the factors listed? And the excerpt quoted does not comprise the full statement of duties, by any means, merely enough to indicate that the average man does not really keep all the information necessary to the carrying out of his daily work "in his head."

A buyer's work may appear rather complicated, upon comparison to the average manual job. Perhaps it is. But let any thoughtful executive take the simplest job in his organization, analyze it, gauge the meaning of the functions performed in the total over-all scheme of company operations and write a detailed description of that simple job and of all the other work that it affects.

Use the janitor, the truck-driver, the PBX receptionist, as guinea pigs. Upon brief reflection, the activities of such employees will appear in a new light. At a glance, it may be noticed that the work of the janitor, if neglected, may add to the cost of manufacturing by causing injuries; that the truck-driver may well disturb public relations; and the receptionist add to the worries of the Personnel Director.

Not all these evils can be averted by the preparation of a company manual. But they can be minimized. Human nature being what it is, the average employee will not think deeply about his job, and all the implications that branch out from what he does, or fails to do, unless it is all set out for him in language that he understands. Undoubtedly, he is decent enough, and ambitious enough, to do what is expected of him, when the reasons for doing his work efficiently are made clear.

And such is the purpose of a company manual.

Industrial X-Ray

One of the most unusual new applications of x-ray to industry is to reproduce templates and large drawings on metal sheets, widely used in the construction of large airplanes, the Northern California chapter, American Foundrymen's Association, were told recently by E. Dale Trout of General Electric X-Ray Corp. Recent developments in the die casting industry also have made it unnecessary to examine great numbers of castings. This is being done by fluoroscopy, wherein the structural shadows are observed on a screen, making the exposure and processing of films unnecessary.

200-Foot Wood Trusses at Ryan

In the new final assembly building of the Ryan Aeronautical Company, San Diego, are 200-foot span clear wood trusses, the longest ever built. In prewar days a wooden truss of over 125 foot span was a rarity, but the growth of the aircraft industry has created the necessity for wider floor spaces, unobstructed by supporting members, which of course requires longer span roof trusses and in the absence or scarcity of steel, timber was the only resort. Timber due to mechanical and structural properties of the material itself has certain limitations, once considered definite but now expanded.

The building is one large room, 570 feet long, 200 feet wide, 35 feet clear height under the trusses and 60 feet to the crown of the roof, there being 31 trusses spaced 19 feet apart. Trusses are 25 feet high in the center, the height thus being one-eighth of the span.

The upper chords of the trusses are laminated, permitting use of smaller sizes of timber, and the lower chords are solid timbers, joined with steel splice plates. Trusses are designed to sustain customary dead and live loads, plus certain moving crane loads applied to the lower chord. Deflection of wood trusses, due to "compacting" of the various joints under the influence of time and loading, and also to timber shrinkage, is a major consideration, especially in long spans.

To minimize shrinkage difficulties in the new green lumber, all parts were treated in a hot solution of wood preservative which removed surface sap and replaced the preservative so that seasoning would proceed without abnormal checking or distortion.



• 200-foot span clear wood trusses, shown in construction stage, are one of the unique construction features in Ryan Aeronautical Co. new final assembly building.

Portland Review

TREND is toward two shifts as a means of relieving the labor shortage. Although Edgar Kaiser has been vehemently denying that the two-shift plan will go into effect in the shipyards, study meetings have been held, and there is enough smoke to lead workers to believe that there must be a fire. Other industries are also putting on the pressure to get two shifts. . . .

Oregon's logging and lumber industry has suffered probably the largest slump in employment, dropping from 52,000 employed in the state a few months ago to 46,000 at present, according to the Oregon Postwar Readjustment Commission. In spite of this, production continues to soar. Pulpwood production in February was 24 per cent over February 1943, and Western Pine Association claimed to have reached an all-time high in lumber production for the first quarter of 1944. The big hitch is that shipments are running even higher. Operators assert that draft deferments in the shipyards have a greater appeal in attracting workers than wage rates, although Dr. Louis Bloch, labor economist for WMC, says higher pay is needed. . . .

Aluminum companies also need men. The number of workers has dropped from 603 to 535 at Longview, from 913 to 861 at Vancouver and from 908 to 809 at Troutdale. Despite pleas from local congressmen, little help can be expected. WMC has forbid these companies to recruit outside the region and will continue this prohibition until persuaded otherwise by WPB. WPB, on the other hand, states that it has plenty of aluminum and is quite unconcerned as to whether the local companies have to restrict production or not. "Better get prepared to reduce operations" is its only comment. . . .

Tapering off of demands for machinists was seen during the month. H. J. Detloff, secretary of the local Machinists Union, told how his union grew from 1200 members before the war to 10,000 at present. However, during February and March the union lost 684 members. "They are doing other jobs, but not as machinists." . . .

Readjustment blues were the theme song at the Patman Committee hearing April 11. Congressman H. M. Jackson of Everett, Wash., who presided, said it was quite apparent that the Northwest smaller war plants were suffering more than those in California, as completion of contracts is coming about sooner here. Here were some of the significant problems submitted:

Fowler Manufacturing Company, builders of electric water heaters, has orders for



* San Bernardino (California) Air Service Command is training thousands of civilian mechanics to repair the army's planes. Picture shows learners receiving instruction.

835 heaters for housing projects and dairies but can't get WPB approval for material to build them because it is in a critical labor shortage area. In the meantime the needed heaters are being shipped in from the East.

General Metals Company, Inc., builders of sheet steel heating stoves now making bomb cases and aircraft carrier doors, will have all its contracts expire soon and would like to get back into stove production. WPB will not allow the necessary metal because this is a critical labor shortage area. In the meantime a St. Louis manufacturer is shipping carloads of identical type stoves into the Portland market.

Chisholm Manufacturing Co. complained that production line machinery possessed by eastern manufacturers enabled them to lay down certain types of items in Portland cheaper than his company can produce them right here.

Wooden shipbuilding barges, etc., is all through in the Puget Sound area and will soon be completed in Portland. Machine tool production is almost a thing of the past. Wood truck transport body production is declining. Last year there were ten contractors operating on the coast. Today there are only three in this line.

Liberty ship engine production is through and new turbines cannot be built here according to E. C. Sammons, president of Oregon War Industries and vice president of Iron Fireman Manufacturing Company. Oregon War Industries turned out \$12,411,000 worth of business last year and still has a backlog of \$12,000,000. Nevertheless, Sammons declares that subcontracting will be finished at the end of this year and no new contracts are in sight.

Feeder Air Lines

Pacific Coast communities of 2,500 population will be reached by feeder airline service after the war, according to James G. Ray, vice president, Southwest Airways Company, if applications now pending with the Civil Aeronautics Board are approved.

Steel Ease-up

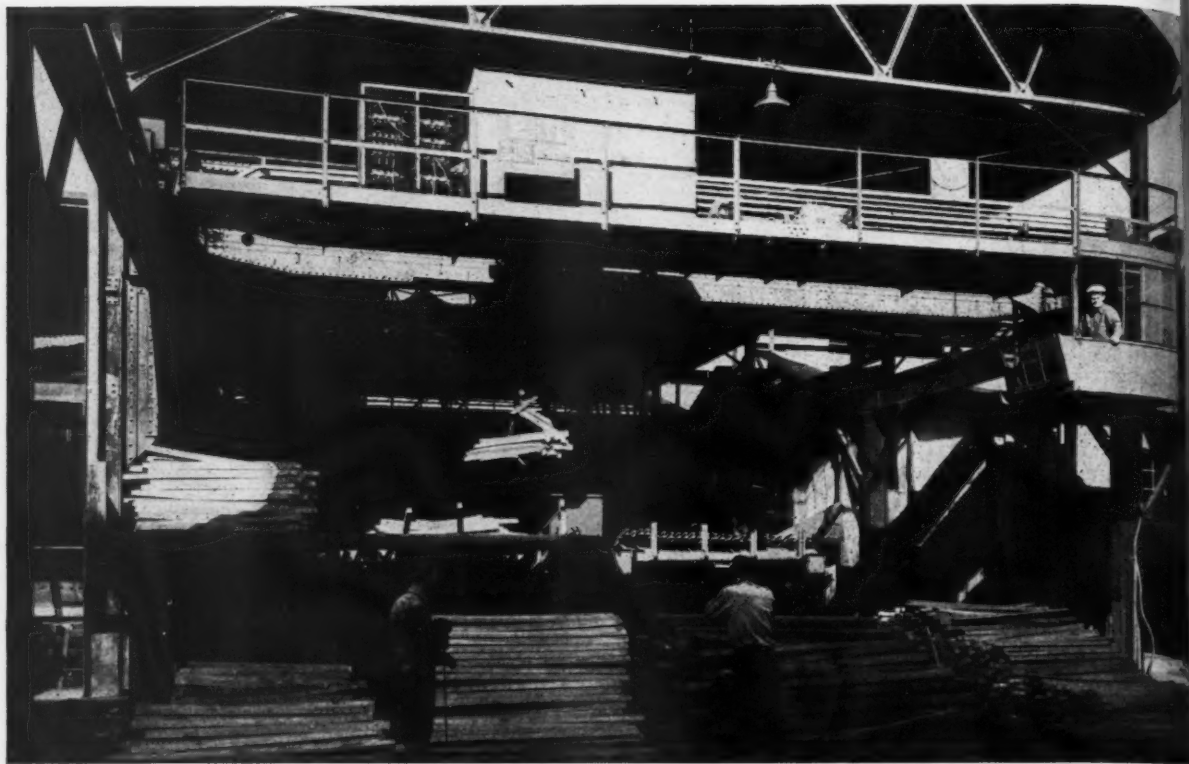
Easing of restrictions on use of steel permits use of heavier springs in single and double-deck coil bedsprings and box springs, manufacture of heavier gauges of barbed wire, with standard weights of zinc coatings, use of alloy steel instead of carbon steel in many types of saws, and manufacture of extra-heavy cast iron soil pipe.

Bought by Pacific Car

Pacific Car and Foundry Company of Renton, Wash., have acquired all of the stock of the Everett-Pacific Company, a ship-building firm engaged in the construction of floating docks and auxiliary naval vessels at Everett. The Everett yard is expected soon to undertake the repair and conversion of marine vessels of all types of any size up to 12,000 tons for the War Shipping Administration and private operators.

Liberty Ship Profits

On the basis of a renegotiation agreement with Oregon Shipbuilding Corporation, the Maritime Commission has set up a basic formula for profits on Liberty ship contracts, amounting to about \$25,000 each, or approximately 1½ per cent of the cost of the vessel. This makes the cost of Liberty ships about \$157 a deadweight ton compared to about \$210 for the Hog Island vessels of the last war.



• High speed mill crane in the billet yard of Bethlehem Steel Co. at South San Francisco picks up grab of hot billets.

Crane Safety Rules Listed By Mare Island Navy Yard Officer

1. WE FIND it is better to base your discipline on a violation of a rule rather than upon an incident. This establishes in the minds of the operating personnel a realization of the significance of a published rule or regulation. If the rules are adequate, concise, and understandable and are complied with by personnel, no incident can occur.

2. I believe that if we will check all of our crane accidents we will come to the conclusion that there existed an error in judgment on the part of the operator or rigger, or both.

In order to bring training and experience on which judgment is based into phase, we have established certain rules in our activity at Mare Island. First is a semi-annual physical examination for all crane operators in which muscular coordination is checked and vision made a specific requirement. This is particularly essential in assuring ourselves that every crane operator has depth perception.

3. The next step should be to establish in the minds of every operator the sincere

By LIEUT. COMDR. L. F. KENGLE
Safety Engineer
Mare Island Navy Yard*

interest management has in accident prevention. This must be established before you can expect them to take your rules and regulations seriously and it does not become a popular thing with the operators to break the rules.

4. It is recommended in some crane specifications that all levers be so arranged that they will move in the direction in which the crane load moves. This should be elaborated upon so they will be placed in every piece of equipment in the same relation to each other.

This is borne out by an experience we had in one among 60 locomotive cranes, in which the throttles were opened with forward and backward movement of the throttle lever. This contributed to a minor incident where, in an emergency, an operator accustomed to a forward moving throttle was operating a locomotive crane with a throttle operating by opposite motion and by habit opened instead of closed throttle.

5. The cleanliness, neatness and organization in shops and throughout the yard where crane operations are carried on leads to cleanliness in crane cabs. Careful attention to making the access ladders meet with all of the standard safety requirements impresses upon the operator the item of safely going to and from his work. At every crane access ladder and every operating crane cab, we have provided two small signs: one illustrating the standard crane signals with the notice that these are the signals to be recognized and obeyed, and the other sign is a short set of safety rules.

6. Crane operators are required to relieve each other at levels other than the crane itself and the crane energy must be removed before leaving the cab. A careful inspection is to be made by the relieving operator after relieving. He is impressed continually with the rule that he is to accept signals from a single individual, the rigger in charge of the operation, and in the case of locomotive cranes, that he is not to move his crane until the crane pilot or safety man has cleared him, is

(Continued on Page 34)

*From paper presented at the National Safety Council annual Congress.

"Engineering in Wood"

Today's *musts* in timber construction include blimp and airplane hangars, army depots, shipyards, cantonments, war plants of all kinds.

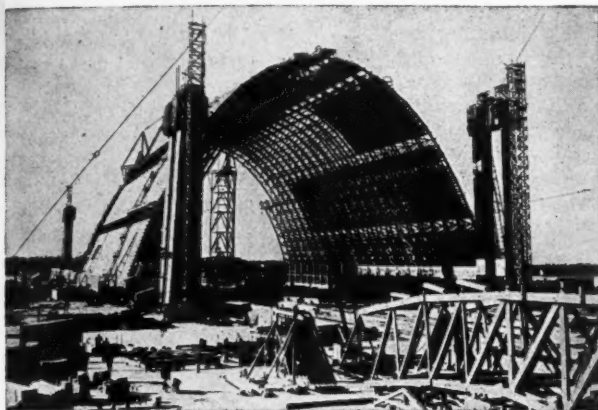
To this entire field Timber Structures, Inc. has helped bring *Engineering in Wood*, just as it did to plant construction before Pearl Harbor, just as it will do again for the postwar building certainties of industry.

Engineering in Wood is many things. Research, design, engineering, prefabrication, transportation, erection. All are part of Timber Structures service

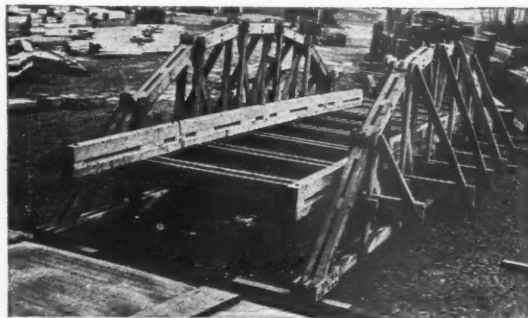
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to plant management, engineers, contractors and architects. All are responsible for the construction speed, economy, strength and permanence of roof trusses and other timber structures and items supplied by this organization.

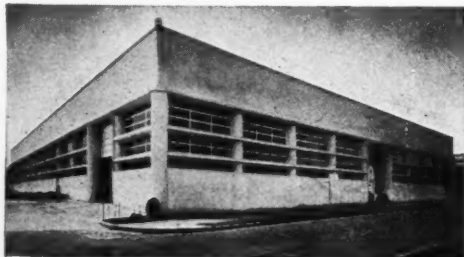
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WORLD'S LARGEST TIMBER STRUCTURE. One of many similar blimp hangars for the Navy which Timber Structures, Inc. has fabricated and fire-proofed. 1000' long; 235' wide; 185' high. 2050 tons of steel were saved by Navy's use of modern timber design fabrication and treatment. TECO connectors and their use procedure as developed and made available by the Forest Products Laboratory and Timber Engineering Co., (subsidiary of National Lumber Manufacturers Association), helped greatly to make these structures economically possible in wood.

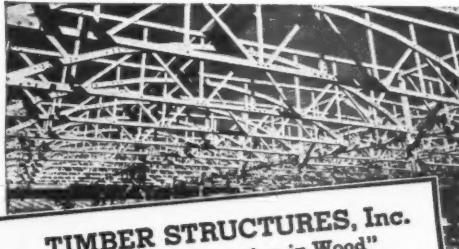


PAN-AMERICAN HIGHWAY. Bridges like this (50'-70'-90' lengths) were completed and shipped by Timber Structures, Inc. 18 days after order was received—15 days ahead of schedule. One bridge of each size was given a trial assembly for inspection purposes, then creosoted at Pope-Talbot plant, St. Helens, Oregon. Bridges designed by U. S. Engineers.



WAREHOUSE, 200'x300' for Woodbury and Co., Portland, Ore. Roof trusses for this modern building designed, fabricated and erected by Timber Structures, Inc. Architect: Richard Sundeleaf, Portland. Contractor: Wegman & Son, Portland. Miles K. Cooper, Portland, Structural Engineer.

PLYWOOD PLANT, Peninsula Plywood Corp., Port Angeles, Wash. 90'-64' trusses were provided. Engineer: J. H. Stevenson. Contractor: A. S. Hainsworth Const. Co., Seattle.



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CRANE SAFETY (From Page 32)

present and aware of his responsibility. These we recommend as essential in the establishing of safe habits.

7. Fire extinguisher equipment is maintained in the cab and is regularly inspected. To prevent panic in event of power failure, aerial bombing, or fire, every overhead crane is provided with a knotted rope, well secured in the cab, so that every operator may abandon his crane in any of the above events.

8. Our crane inspections are complete and periodic and careful records are made. Both the rigger in charge and the crane operator make reports to a relief of every extreme strain and this is also reported by memorandum to the responsible authority. The management's concern for this is such that the responsible seniors respect these reports and subject the equipment to a rigid inspection and test, if indicated, for every reported incident.

9. We are using a hydromatic weight indicator that can be put in the dead end of all boom crane lifting cables, matched up with a boom length indicator of rigid construction. These weight indicators were bought at a cost of \$500 each. These were so successful and were so readily accepted by the operators that the manufacturer was asked to design similar equipment for use on all hammerhead cranes and all floating cranes. No failures have been reported and no particular care has been necessary on any of this equipment for the several months it has been in use.

This item alone takes out of the hands of the operator, the operating personnel and the rigger the excuse for overloading and the excuse for errors in judgment. There have been no crane incidents to any of the equipment thus provided and, based upon previous experience, in the six months that these have been in operation, they have paid back over five per cent of their cost.

10. We have locomotive diesel crane inspection cards of the check-off type, wherein an inspector covers every item to be checked and indicates the date and the condition, with remarks. This report is recorded. These forms vary with the cranes, types and motive power. There are special forms for steam propelled, diesel propelled and electrically propelled crane equipment.

Fluorescent Possibilities

A fluorescent home lamp in which the color of the light may be colored at will was revealed as one of the lighting possibilities which may be expected after the war by R. H. Bishop, general sales manager of the lighting division of Sylvania Electric Products, Inc., in a talk to electrical men in San Francisco last month. He suggested a row of glass brick set in the wall around a room, each brick an individual fluorescent lamp with the phosphorus impregnated in the glass, or a glass globe, the surface of which is the light source.

Safety at Calship

The 78 per cent reduction in California Shipbuilding Corporation's average monthly man-days lost from injuries on the job in 1943 emphasizes the fact that most industrial accidents are preventable. There has been a steady decline in monthly accident frequency rate from 45.3 to 12.4 during 1943. This reflects a reduction in the number of lost-time injuries from 344 in January to 89 in December. To production this meant an average saving of 5,700 man-days per month.

The three most common causes were:

1. Failure to protect eyes.
2. Improper method of handling material.
3. Unsafe condition or improper use of ladders or staging.

Some of the factors contributing to the record which brought Calship the National Safety Council's "Distinguished Service to Safety" award in January, 1944, were the inauguration of safety examinations for those promoted above journeyman, greater use of personal safety equipment, the prompt maintenance and repair of tools and facilities, the establishment of a ventilation division, the increased effectiveness of the safety inspector staff, the helpful cooperation of Industrial Accident Commission and Insurance Carrier personnel, and the good attendance and interest in foremen's safety conferences which served as a clearing house for the exchange of safety methods and procedure by supervision on all shifts.

Wineries Cut Back

Ten California wineries which have been producing industrial alcohol from Hawaiian molasses since January 1943 have stopped production, their supplier having been ordered by WPB to terminate molasses deliveries April 1.

Mechanical Injection Swells Oil Recovery

By mechanical injection of gas to increase the withdrawal rate of oil from wells, Sinclair-Wyoming Oil Corporation has been able to recover an additional 1,623,237 barrels of oils from the Wertz-Dome field in the last two and one-half years.

The chief objective of pressure-maintenance is usually to prevent or retard a decline of reservoir pressures in order to attain more efficient and greater ultimate recovery of the oil. Where hydro-static drive is used, this includes control of water movement into the reservoir to prevent possible trapping of the oil, and the utilization of this natural energy to force the oil uniformly into the well bores.

In order to help meet current war needs, pressure maintenance operations at the Wertz-Dome field have been designed so that a volumetric balance is maintained between the oil withdrawn and the gas injected so that it will be possible to realize maximum oil recovery and deplete the reservoir in much less time than would ordinarily be required.

After a thorough study of the reservoir conditions it was calculated that 1,400 cubic feet of gas would be required to displace a barrel of oil. Thus, by returning to the deposit this volume of gas for each barrel of oil over the normal daily output of 3,300 barrels, recovery could theoretically be sustained at any rate desired without decline of pressure, and, by returning a greater volume of gas, the output could be increased.

To obtain the present high rate of oil production of 4,280,000 cubic feet of gas is pumped daily to the pools at a discharge pressure of 1,825 pounds per square inch.



• "WATER BUFFALOS." Above is illustrated one of the amphibious tanks being built by Food Machinery Corp., which has necessitated expanding facilities. At San Jose, Calif., the Adrian Mfg. Co. property has been leased to handle cutting and fabricating of steel, and at Riverside the assembly line extended to increase production. The Lakeland, Fla., plant has also been enlarged. Iron Fireman Mfg. Co., Portland, is supplying various parts.

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**TOP LOCKS
WITH
REMOVABLE KEY**

**CLOSE FITTING
DUST-PROOF
CLOSURE**

**LARGE CAPACITY
(1500 TABLETS)
LESS FREQUENT
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**TRANSPARENT
WINDOW TO
MAKE CHECKING
SUPPLY EASIER**

**CLEAR
TABLET RETAINER
AVOIDS WASTE
AND SPILLAGE**

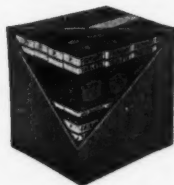
**OPERATED
BY ONE HAND**

FAIRWAY TABLETS



Made 10-grain Salt or Salt and Dextrose. Packed 4 boxes of 1500 each to a carton to facilitate sanitary handling.

FAIRWAY BULK PACKAGE



Consists of 60,000 10-grain tablets—either salt or combination. Packed 40 boxes of 1500 each, for sanitary handling. Only 1 "dispenser full" at a time. The balance is kept clean.

SAFETY, SANITATION AND ECONOMY - *positively identifies* **FAIRWAY DISPENSERS**

**To Protect Your Workers, Protect Your
Salt Tablets**

The handling and method of distribution of your salt tablets should receive equal consideration with the protection of your water supply. Contaminated salt tablets are as dangerous as contaminated food or a polluted water supply, whether the contamination is done intentionally or by accident.

The Fairway plastic dispensers, both Junior and Midget size and the StaSafe metal dispensers, are protected with a tamper-proof lock which operates with a key. This lock helps prevent opening of the dispensers without authority. The plastic or metal construction makes sterilization easy. If you are not already using this type dispenser, it will merit your consideration. Full information on the dispensers and on the use of salt tablets in industry is available on request.

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DICKSON SAFETY PRODUCTS COMPANY
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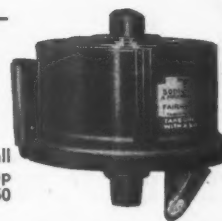
**AN OLD FRIEND
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We have been allotted a limited supply of the necessary metal for making more of the regular style StaSafe dispenser. A few of these old standbys will be available this season. In either 1500 or 350 tablet capacity.

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**FOR LIMITED SPACE
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The most successful unit where small groups are employed. Has lock top and mounting brackets. Capacity 350 10-grain tablets. Plastic molded.



Colorado River Key Held By Denver Man

WASHINGTON, D.C.—We hear that Judge Clifford H. Stone of Denver, Director of the Colorado Water Conservation Board, and chairman of the Committee of Fourteen for the seven states on the Colorado River, will be appointed to the office of Assistant Secretary of the Interior, recently created by Act of Congress.

Judge Stone generally is regarded as one of the most eminent lawyers in the United States on water problems and on purely Western affairs. It was Judge Stone who guided the formulation of the program by which Mexico has been given 1,500,000 acre feet of the water of the Colorado River. The State Department as well as the Secretary of the Interior, apparently agree with the President that Judge Stone has the sweep of vision which is required in national affairs as well as international treaty-making.

His name has not yet come before the Senate for confirmation. The delay in announcing the appointment is assumed to be connected with the controversy which has arisen over the agreement which gave Mexico a share of the water belonging to California, Arizona, and Nevada, as well as the assurance of certain works to be built in the United States, and certain sup-

By ARNOLD KRUCKMAN

plies of power from plants belonging to the United States. In return for these benefits Mexico is to give Texas water on the Rio Grande.

The arrangement is distinctly unpopular with the people on the lower half of the Colorado, and has moved Congressman Carl Hinshaw of Pasadena to introduce two bills. HJR 462 would authorize the Committee on Judiciary to investigate the validity of the proposed bestowal of the Colorado River water, as well as the constitutionality of the proposal to use the funds of the United States to build public works on the territory of the United States for the benefit of Mexico.

It also questions whether or not the State Department has the power to make an agreement forbidding or setting aside all immigration restrictions, passport, labor and other regulations, affecting persons entering the United States who are employed by Mexico. The bill apparently is designed to question the authority of the executive agencies to waive for an indefinite period all import and export duties on materials and equipment that might be brought into the United States to build the works for the Mexicans.

Hinshaw's other bill, HJR 232, would authorize the Government to negotiate the purchase of Lower California and a small

One of the best-informed writers at the Nation's Capital, Arnold Kruckman, presents each month authoritative comments on political developments and their practical application to industry of the West. Any reader who wishes additional information may write to him directly, using business letterhead, at 1120 Vermont Avenue, N.W., Washington, D.C. Inquiries will be answered free of charge. You also are invited to contact him personally in Washington. Copies of pending congressional bills may also be obtained free of charge.

strip of Sonora in order that the entire course of the Colorado River might be brought within the confines of the United States. Both bills are now in the Judiciary Committee, which is headed by Rep. Sumner of Texas. There is no indication, yet, that either bill will be reported to the Congress in the near future.

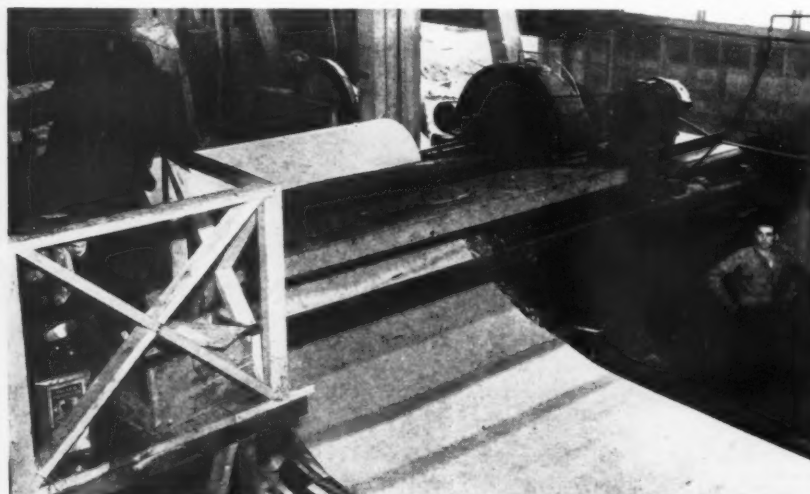
The treaty by the State Department, formulated with the aid of Judge Stone and his committee, will be considered early in May by the Senate Foreign Affairs Committee, headed by Senator Connally of Texas. It was approved by Judge Stone's committee by a vote of 10 to 2, the opposing votes coming from the members representing California. Two members of the committee did not vote.

Obviously this conflict over the disposal of the Colorado River waters revives the disagreement that has long divided the major elements of the West Slope. The people of the states on the lower part of the river maintain they need a great part of the 1,500,000 acre feet which would be allocated to Mexico. They think the allocation would not interfere with the water supplied to the people of the upper river, since the division would require that the water given the Mexicans would come from the water apportioned to the lower states.

Developments in Arizona, Nevada, and California, with the extraordinary increase in population, and the drift of permanent population to this area, lead the people of the section to feel they need all the water available for their swiftly growing irrigation, power, domestic, and industrial needs. They propose to give Mexico 750,000 acre feet and to make certain dispositions which would permit the control of the water without the works planned by the State Department treaty.

Judge Stone and his group, on the other hand, suggest that if the deal cannot be made with Mexico by treaty, that Mexico has the right to demand the whole ques-

(Continued on Page 38)



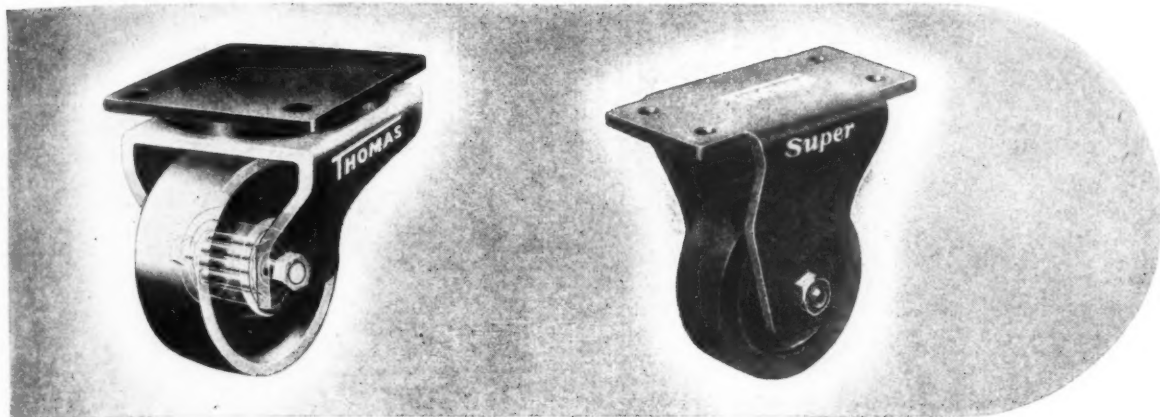
• Giant lathes like this one are used to peel the veneer from the fine, knot-free Douglas fir used in making of fir plywood in the Pacific Northwest. The block is rotated against a keen-cutting blade which "shaves" off the ribbon of wood usually from a tenth to a seventh of an inch thick. From an eight-foot "peeler block" 50 inches in diameter, 2,000 square feet of plywood is manufactured. Three blocks provide enough panels to build a small all-plywood house.

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Hardwood and steel frames. For every material and freight handling job. 46 types.



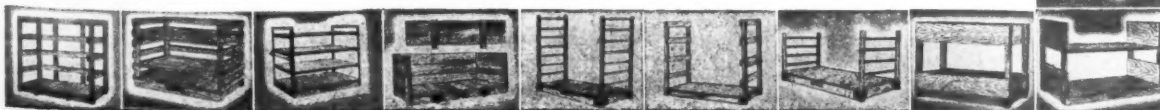
CASTERS

A major part of our business. New catalog illustrates 18 different casters in hundreds of sizes.



WHEELS

Metal and rubber and leather in a dozen types and in hundreds of sizes.



KRUCKMAN (Cont'd from Page 36)

tion be submitted to a Board of International Arbitration, the arbitrators to be composed of a like number from the United States and from Mexico, and these representatives, in turn, would choose a neutral group to participate in the adjudication. It appears, however, that Mexico agreed in the Treaty of Guadalupe Hidalgo in 1848 that the lower river should be maintained as a navigable stream. It is apparent the effort to arbitrate might lead to interminable complications and endless delays.

There is much likelihood this fundamental difference between the States of the Pacific Slope may cause another split that might set back the cause of Western unity for many decades. The recent vote upon the Rivers and Harbors Omnibus Act, when a majority of the representatives from the West Slope prevented the clear enunciation of the principle of the prior right of the use of water for production of food and fibre, and for power, industry and domestic needs, was a forerunner of the more serious division upon the question of the allocation of water in a Western American stream to another nation.

The situation today in Congress among the members from the West Slope vividly illustrates the need for a larger unity under a leadership that may be able to settle the fundamentals before they become a

matter of open conflict on the floor of Congress. There is little doubt this water fight, like most other water fights, gives every evidence that it will engender bitter feelings; and we know from past experiences that such animosities are lasting and costly. It has been possible in the past to find an answer to such differences, as was demonstrated in the compact that brought about the magnificent development of the Colorado. Such results come only with leadership and organization.

Synthetic Fuel

On the other side of the monthly news balance sheet it is pleasing to report that the President has signed the law sponsored by Senator O'Mahoney which enables the Bureau of Mines to start on the establishment of the pilot plants to develop synthetic fuel from oil and gas. As outlined previously, most of these plants will be built on the West Slope, and will blaze the trail finally for the utilization of the vast shale deposits on the West Slope. Approximately \$30,000,000 is available for this investigation.

There is scarcely any possibility that WPB will seriously move to prevent the swift accomplishment of this program. Fuel of all kinds is pressingly required to win the war. On the other hand, it is singular that efforts are in train from several sources to limit the development of plants to manufacture alcohol from liquid and


solid wood wastes. Apparently WPB has clamped down on construction of more plants.

There is no reason to feel that the plants already permitted in Oregon and on the Puget Sound will be stopped. Rep. Fred Norman of Washington and others are taking no chances, however, and are watching vigilantly to actively interpose if any freeze orders appear on the horizon.

No possible doubt exists that alcohol is one of the most pressing needs of the war. The war requirements are so great that another 80,000,000 bushels of grain may be withdrawn from the already badly pinched food-cereal stockpile, and food industries daily are suffering more acutely by reason of the increasing conversion of sugar to alcohol.

Moreover, this alcohol costs the Government, on contract, from 79c to \$1.25 per gallon, while the alcohol made from wood wastes, according to the report by the investigators at the Madison, Wis., Forest Service laboratory, can be sold for 25c a gallon, and is the same type of ethyl alcohol. With this authoritative background, and the approval of WPB Production Research and Development Office, it is difficult to understand the bill, HR 4096, introduced by Rep. Anton J. Johnson of Illinois, which would prohibit the use of

(Continued on Page 40)



Our production is concentrated on the Pacific Coast, eliminating cross-country shipping, and assuring a more immediate and dependable supply.

Although our facilities are devoted to war production, Smoot-Holman still manufactures a full line of industrial and commercial lighting equipment for essential business.

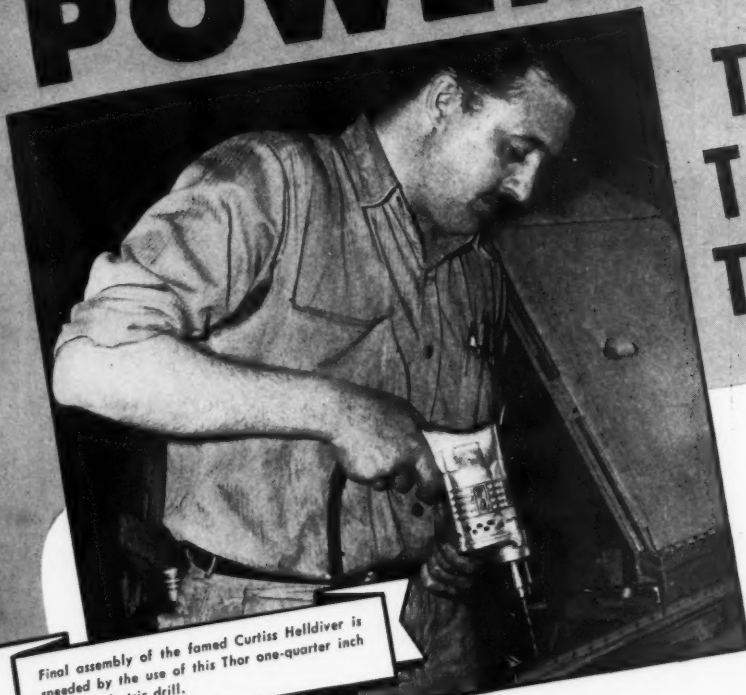
Sight-Craft lighting fulfills every requirement for better illumination, whether your needs are for conventional reflectors and luminaries, or for modern, fluorescent equipment.

SMOOT-HOLMAN
COMPANY
INGLEWOOD, CALIFORNIA

SIGHT-CRAFT
INDUSTRIAL LIGHTING EQUIPMENT

POWER . . .

TO SEE THE JOB THROUGH



Final assembly of the famed Curtiss Helldiver is speeded by the use of this Thor one-quarter inch portable electric drill.

Thor

PORTABLE ELECTRIC TOOLS

OUTSTANDING THOR FEATURES OF DESIGN AND CONSTRUCTION



Thor Motor



Thor Gears



Thor Bearings

THOR MOTORS
are fabricated of the highest grade materials, with armatures carefully wound and insulated to withstand heat and vibration. Commutators are assembled with special care to avoid floating segments or raised bars.

THOR GEARS
are made of heat treated alloy steel with oversize pitch to assure smooth operation and longer life.

THOR VENTILATION
of the tangential type provides 25% greater cooling capacity.

THOR BEARINGS
of the highest grade, are mounted in cast-in steel inserts and diamond bored to assure perfect alignment.

Greater power combined with speed gives you faster, better performance with Thor Portable Electric Tools that sees scores of jobs through quickly.

Thor combines balanced motor design with lightweight construction to provide this greater power and faster, easier handling.

The Thor motor, producing true, smooth-running power because it is balanced both statically and dynamically as a complete assembly, is ruggedly built to stand up . . . longer, under the toughest operations.

Thor housings of strongly reinforced aluminum alloys and, in late drill models, of durable "Thorite" plastic, are compactly built to reduce weight to an absolute minimum without sacrifice of motor size and capacity, providing the light weight and handling ease that adds speed to power to get jobs done faster.

Write today for more details of the complete line of Thor Portable Electric drills, screwdrivers, nut setters, tappers, grinders, sanders, polishers, hammers, nibblers, saws and bench grinders in Catalog No. 38.

Thor

Portable Electric Tools

INDEPENDENT PNEUMATIC TOOL COMPANY



600 W. JACKSON BOULEVARD, CHICAGO, ILL.
Branches in Principal Cities

KRUCKMAN (Cont'd from Page 38)

Federal funds or facilities to build, maintain, or operate plants for the production of "synthetic" alcohol.

However, Rep. Fred Norman has introduced his bill, which has the approval of the Department of Agriculture, to establish a number of pilot plants in the Northwest to develop further the conversion of wood and wood wastes as alcohol and other products. It is planned the Government work shall not in any way trespass upon private industry. The plants are to be placed in Washington, Oregon and Idaho. Jack Underwood, Seattle's Chamber of Commerce representative in the Capital, has manifested an unusual interest in the program. He is one of the most colorful Westerners in Washington.

Western Growth

The West Slope definitely is benefiting markedly by the shift in population. Figures issued here by Census, by OWI, and by other agencies, do not agree; but they all indicate the West Slope, especially the West Coast, has gained approximately 2,000,000 of the 8,000,000 who have left their former abodes. The disparity in the range of figures leads to the suspicion that you have undoubtedly gained more, probably substantially more.

California alone is officially credited with 1,100,000 gain; Oregon, 175,000; Washington, 225,000; Nevada, 100,000; Utah, 100,000; and Arizona, 200,000. The only other state-wide increases are credited by Census to Michigan, 100,000; Florida, 300,000; Delaware, 10,000; District of Columbia, 225,000; Maryland, 300,000; Virginia, 225,000; Connecticut, 100,000.

All the other states have lost. New York has lost over 1,000,000; Pennsylvania over 600,000; Illinois, 350,000. The greatest losses, in proportion, have been in the states between the Rockies and the Ohio River. Some southern states have had heavy losses. In most states there have been tremendous shifts from one part of the state to another. Some counties have lost as much as 900 per cent of their population. But the outstanding, overwhelming conclusion all reports leave in one's mind is that the trend is westward, across the Rockies. Business here in the East has taken sharp notice of the shift, and is planning to invade the West Slope for business opportunities as soon as transportation and manpower and facilities settle to normal.

Many Diesels

Thirty-three Diesel engines, totaling over 21,000 horsepower, were sent off the production lines in March by Enterprise Engine & Foundry Company, largest manufacturers of Diesel engines on the Pacific Coast. This represents a 50 percent increase over a year ago.

The Difference may be only a few Salt Tablets

... and they cost less than

1 cent a man per week

Salt is vital to proper body tone. Loss of salt through sweat can easily transform an eager, alert, comfortable worker into one who is fatigued, miserable, careless.

Loss of salt dehydrates the body, thickens the blood, destroys the equilibrium of body fluids. The results are Heat-Fag, inalertness, accidents, heat prostrations.

The preventive is salt and water—water to restore the moisture lost in sweat, salt to restore the saline balance. Water alone won't do it. Under hot, "sweaty" conditions water alone dilutes the blood and causes heat cramps.

Industrial physicians with America's greatest manufacturing plants have found that the easy, simple, economical way to provide essential salt is Morton's Salt Tablets at every drinking fountain. A tablet with every drink of water is all that's necessary to prevent Heat-Fag, heat cramps, heat prostrations — to keep workers alert, comfortable, at peak production. The cost is less than a cent a man per week.

This Is What Happens When Sweating Robs the Body of Salt ...



QUICK DISSOLVING

(Less than 30 Seconds)

This is how a Morton's Salt Tablet looks when magnified. See how soft and porous it is inside. When swallowed with a drink of water, it dissolves in less than 30 seconds.

Case of 9000, 10-grain salt tablets - - - - - **\$2.40**
Salt-Dextrose tablets, case of 9000 - - - - - **\$3.15**



MORTON'S DISPENSERS

They deliver salt tablets, one at a time, quickly, cleanly—no waste. Sanitary, easily filled, durable.

800 Tablet size - - - **\$3.25**

Order from your distributor or directly from this advertisement... Write for free folder.



MORTON SALT COMPANY, Chicago 4, Ill.

These BULLETINS

COVER CIRCUIT BREAKER APPLICATIONS
OF EVERY TYPE AND SIZE....



WHICH OF THESE BULLETINS DO YOU NEED FOR YOUR FILES?

- #3200 Industrial Multi-breakers. 15 to 100 amperes, 230 volts A.C., 2 and 3 Poles.
- #3500 Industrial and General Purpose Circuit Breakers. 10 to 600 amperes, 115 to 600 volts A.C., 125 to 250 volts D.C., 1, 2 and 3 Poles.
- #4000 Multi-breaker Load Centers. 1 to 16 circuits, 15 to 50 amperes, 115-230 volts A.C., 1 and 2 Poles.
- #4500 Multi-Breaker Lighting Panelboards. 15 to 50 amperes Branches, 115-230 volts A.C. Mains, 1 and 2 Poles.
- #5000 Circuit Breaker Lighting Panelboards. 10 to 50 amperes Branches, 125-250 volts A.C. or D.C. Mains, 1 and 2 Poles.
- #5200 Multi-breaker Type MH Distribution Panelboards. 15 to 100 amperes Branches, 230 volts A.C. Mains, 1, 2 and 3 Poles.
- #5300 Square D Type ABH Circuit Breaker Distribution Panelboards. 10 to 50 amperes Branches, 230 volts A.C., 125 D.C. Mains, 2 or 3 Poles.
- #5500 Square D Form W—Circuit Breaker Convertible Distribution Panelboards. 15 to 600 amperes Branches, 600 volts A.C., 250 volts D.C. Mains, 1, 2 or 3 Poles.
- #3000 Square D Switchboards. 575 volts A.C. or D.C.

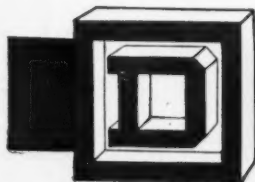


A Square D Field Engineer

Can help you solve any Electrical
Control or Distribution Problem...

You're welcome to the counsel of a Square D Field Engineer. He is in constant contact with plants of every kind and size. He studies methods and applications with the idea of simplifying new jobs and doing old ones better.

Write today for Free Bulletins and full information!



ELECTRICAL EQUIPMENT • KOLLSMAN AIRCRAFT INSTRUMENTS

SQUARE D COMPANY

LOS ANGELES 21 • SAN FRANCISCO 3 • SEATTLE 1 • DENVER 4

Employees' Interest Increases Efficiency

NEW "shuffling" machine which discards the method of selecting laminations by hand to be stacked in transformers, deals the required laminations to the operator automatically. By eliminating hand selection, the machine allows protection for the operator's hand, relieves tension due to count and pick-up and increases production by fifty per cent.—Harry Beaty, Engineering Dept., Thermador Electrical Mfg. Co., Los Angeles.

Testing of hydraulic units is speeded by

use of an AN 6227 "O" seal ring. Time saving in rigging test set-ups is estimated at 60 per cent and use of wrenches on B nuts is eliminated. Rejections because of marked Parker fittings also are eliminated, and replacement of test lines and fittings because of excessive wear is no longer necessary. Only finger tightening is necessary to seal and hold hydraulic pressure up to three times engineering requirements. The rubber seal also is applicable to Parker FNT fittings.—George E. Payne, Dept. 99, shop

foreman, North American Aviation, Inc., Inglewood.

Reconditioning burning tips—the tips are placed in a lathe and the square shoulders are turned to a predetermined diameter. Small brass rings are then fabricated, the tips are fluxed and the rings are slipped onto the shoulders and heated, ready for silver brazing. The tip is then placed on the lathe and new seating surfaces are turned to the proper taper. The result is a "new" tip with a harder seat, tough to nick and longer lasting than the original. About 5000 of these tips have been reclaimed since July 1, 1943, at a cost of about 20 cents per tip. The new tips cost about \$3.50. G. T. Haynes, burning department, California Shipbuilding Corp., Wilmington, Calif.

Suggestion that ground clamp on the ignition cross assembly be eliminated by attaching a ground connection to the clamp already provided to support the assembly, saving one clamp, bolt and nut on each power assembly. L. J. Wood, Dept. 492, Consolidated Vultee, Vultee Field.

New style bosn's chair which is canvas harness with leg holes and stirrups to make it easier to keep proper distance from the side of the ship. It incorporates a safety belt which fits under the workman's arms, making it impossible to fall out. There is also a brace around the top to keep the lines out of the way and give free access to both hands in painting. Charles H. White, sail-maker foreman, Kaiser Company, Vancouver Shipyard.

Suggestion that all material being returned to stock as remnant material from routers or other machines be passed through a box of sawdust to remove oil, etc. Previous method was to wipe material with rags. H. E. Turner, Dept. 4-4, Consolidated Vultee, Vultee Field.

Efficient automatic air-clamp for drill presses which allows use of a drill and spot-face, or rear and spotface, thus eliminating one drill operation. An air pressure chamber is located below the drill table. To it is attached two holding prongs which hold angle stock to be drilled. As the feed lever is turned, the air pressure is synchronized to enter the air chamber with timed action. Air pressure clamps the material to be drilled tightly in place. As the drill moved upward, the air pressure is released and the stock may be moved to the next position for drilling. W. Atherton, Douglas Aircraft.

Sponge backed fibre board stencils which replace the use of individual gummed stencils, resulting in great reduction of time and materials. The stencil may be used 85 to 100 times. Walter McGarvin, Douglas Aircraft.

Extra hole in a lever for the bomb shackle to speed up production from an inspection and manufacturing standpoint. Charles E. Henry, Clk. 216, Dept. 17-1, first shift, Interstate Aircraft and Engineering Corp., El Segundo.



"Come Up and See My Etchings"

Remember that old gag that the boys used to hand out—well, enough of that—let's get going on the Photo-Engraving business where etching is a fine art—and where even the finest etcher must have good Nitric Acid.

That's where Stauffer's Nitric Acid enters the picture. Over a long period we carefully developed an outstanding Nitric Acid which for the past five years has been so universally used, that it has become the STANDARD for the industry in the West.

WHY? For many reasons . . .

First because it is UNIFORM in quality—the etcher knows that it will be the same, carboy after carboy—a great help to him when he dilutes it and works with it.

Second—it etches with very little fumes—the etcher specially likes this.

Third—it etches clean, leaving no deposit.

And there are other reasons, too—it is crystal clear—it keeps its strength a reasonable length of time and thus gives good service—and it won't heat up in the process of etching.

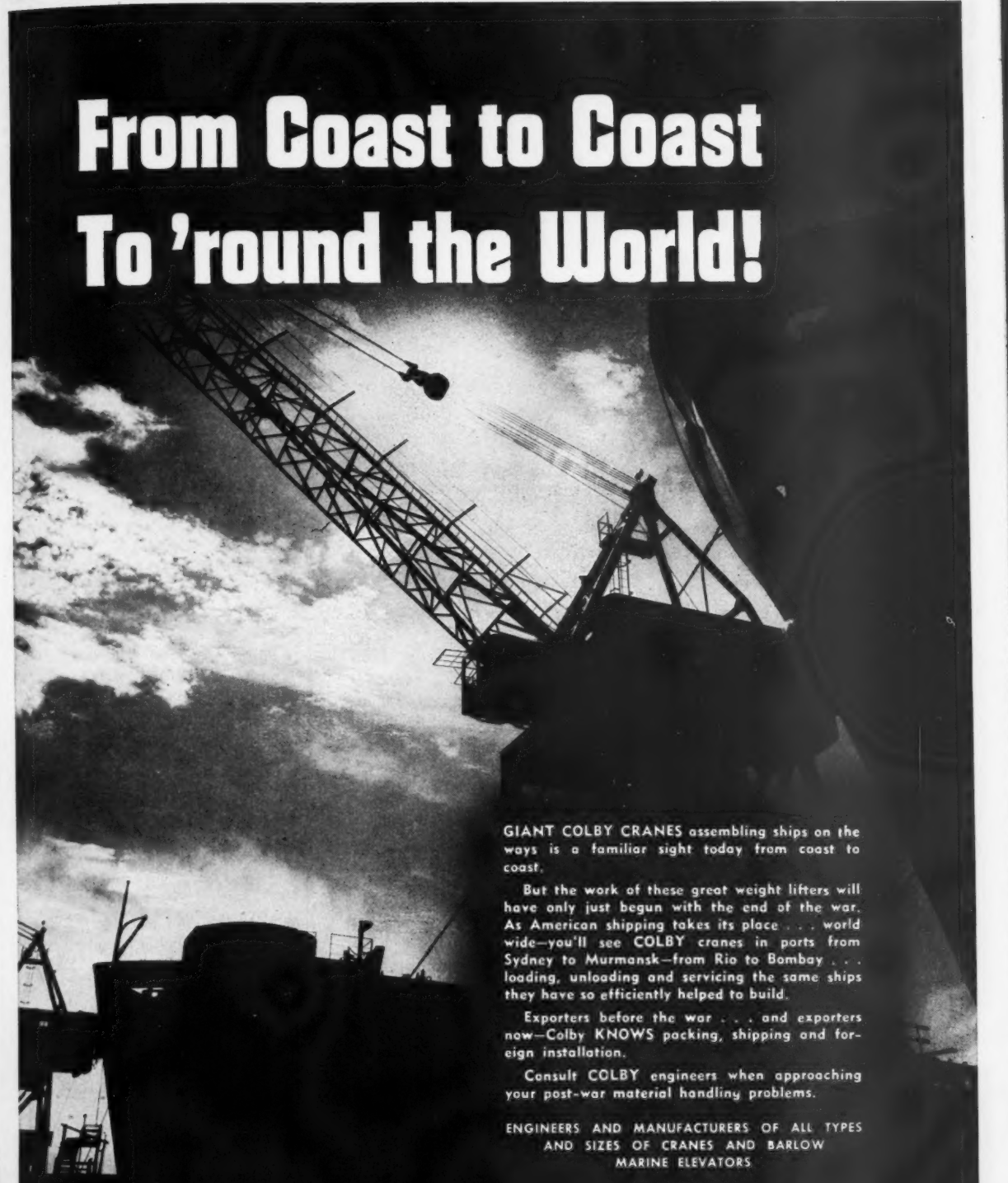
That's why the most successful Photo-Engravers use Stauffer's Nitric Acid. It helps them turn out first class engravings—the kind they are proud to show and say, "I am glad you came up to look over our plant and see our etchings."

Insist on Stauffer's Nitric Acid



STAUFFER CHEMICAL CO.

From Coast to Coast To 'round the World!



GIANT COLBY CRANES assembling ships on the ways is a familiar sight today from coast to coast.

But the work of these great weight lifters will have only just begun with the end of the war. As American shipping takes its place . . . world wide—you'll see COLBY cranes in ports from Sydney to Murmansk—from Rio to Bombay . . . loading, unloading and servicing the same ships they have so efficiently helped to build.

Exporters before the war . . . and exporters now—Colby KNOWS packing, shipping and foreign installation.

Consult COLBY engineers when approaching your post-war material handling problems.

ENGINEERS AND MANUFACTURERS OF ALL TYPES
AND SIZES OF CRANES AND BARLOW
MARINE ELEVATORS

COLBY STEEL AND ENGINEERING COMPANY

15 Park Row
NEW YORK CITY

Central Building
SEATTLE, WASH.

Birks Building
VANCOUVER, B. C.

Affiliated Companies: PRESCOTT IRON WORKS, AMERICAN FOUNDRY CO., Seattle

Bonneville Program To Assist Industry...

BONNEVILLE Power Administration authorities held a meeting in Portland March 31 and April 1 with some 18 leaders in various lines in the Pacific Northwest to lay plans for further coordinating the broad policy and specific programs of the public power projects of the Northwest with the industrial, agricultural and commercial needs and aspirations of the region.

Another meeting is to be held in the near future to hear reports from several sub-committees on proposed programs, in which industrial reconversion and expansion will probably play an important part, in view of the great interest shown at the meeting.

The Administration executives feel that although there is no marketing problem at present, since the power supply is vir-

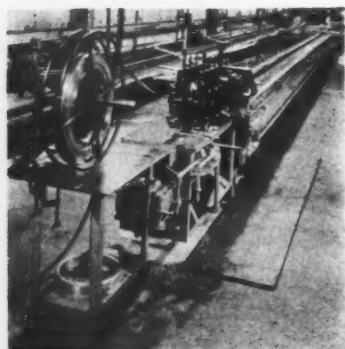
tually sold out, cutbacks in sales are already threatened and the end of the war will require new outlets which must be developed by careful planning. Research work already programmed calls for basic investigations along the following lines so far as its resources of money and men will permit:

1. Assembly and correlation of information as to mineral and organic resources—principally from the point of view of the interested industrialists.
2. Studies of economies, resources, and potential uses of power, in various subareas of the region—not only to assist the Administration in anticipating and stimulating power markets, but to assist businessmen in appraising market possibilities for electro-products.
3. Studies of existing and potential industries, including specific studies in various electrochemical, electrometallurgical, processing and manufacturing fields, looking toward Pacific Northwest industrial locations.
4. Plant site surveys, carried out in cooperation with communities, covering potential industrial locations in strategic districts of the Pacific Northwest.
5. Basic power investigations, including inventory of the major power resources and facilities of the region and their characteristics and capabilities, and of existing and potential power demands.
6. Studies looking toward coordination of power resources and systems.

**MORE
AND
MORE
—
FASTER
AND
FASTER**



The phenomenal production record of Convair has been made possible by the use of the most modern and efficient equipment.



This 60' draw bench, designed and built with the assistance of the Engineering Products Co., is one of these modern and efficient pieces of equipment that is operating at peak performance.

On Engineering Problems call Engineering Products

ENGINEERING PRODUCTS CO.

1600 SO. SAN PEDRO ST. • Prospect 7044 • LOS ANGELES 15, CALIF.

Suggested Specifications For Industrial Engineering Services

(Formulated by a group of industrial engineers for the Merchants & Manufacturers Association of Los Angeles)

- (1) An industrial engineering firm proffering its services should make an adequate preliminary survey.
- (2) The survey should render an honest opinion of the following:
 - a. Can costs be reduced while employees' earnings are increased through application of the recommended program?
 - b. Will correctly engineered method of processing be applicable to any part or all of production?
 - c. Will application of time-studies with standards of performance, effective wage incentive plans, and accurate labor cost and control, aid in accomplishing the desired economies and simplify the control?
- (3) Any agreement made should be in writing and specific as to services that are to be rendered, estimate of time to be consumed in performing the work and type of planning and training to be covered.
- (4) The progress of the actual engineering work should be covered in frequent reports so the client may be clearly and fully advised as to the advancement of the program.
- (5) If required, the engineering firm should train personnel in the client's employ to carry out the program as installed.

THE ARITHMETIC OF THE TRAILER IDEA—

SAVING IN FIRST COST



Let's assume that a 3-ton truck is capable of carrying 8 tons. 1½-ton trucks are every day pulling 8 tons on Trailers.

According to average pre-war cost figures, we have a conservative net difference in original investment for these units of \$1,760.00 or 39%.

SAVING IN FUEL COSTS



Actual Truck-Trailer cost records show fuel savings of approximately 30% over heavy-duty trucks. Average figures indicate that the Truck-Trailer will travel 8½ miles per gallon, while the heavy-duty truck runs only 6 miles to the gallon.

Assuming gasoline to cost 19c per gallon, the truck with its Trailer will use 5,882 gallons in 50,000 miles, while the heavy-duty truck will require 8,333 gallons.

3-6 ton Truck—8,333 gallons at 19c \$1,583.27
Truck-Trailer—5,882 gallons at 19c \$1,117.58

Thus, the Truck-Trailer saving in fuel costs (per 50,000-mile year) is \$465.69.

SAVING IN MAINTENANCE



1½-ton trucks are produced in larger volume and their parts are therefore produced at lower cost. More dealers carry parts, more are equipped to render service—fewer tie-ups.

Thus, since maintenance on the Trailer is negligible, it costs less to keep the Truck-Trailer combination operating. Oil, grease, washing, storage, etc.—are almost 50% lower. Here are the figures (based on actual user experiences):

3-6 ton Truck—50,000 miles \$1,000.00
Truck-Trailer—50,000 miles 575.00

SAVING IN DEPRECIATION



The heavy-duty truck has a practical life of about 100,000 miles. For the small truck pulling the Trailer we will assume a life of only 50,000 miles; the life of the Trailer itself is upwards of 500,000 miles.

Thus, during the 500,000-mile life of the Trailer, the light-duty truck must be replaced 9 times as compared with 4 times for the heavier truck.

But the important thing is *how much*:

3-6 ton Truck:

Average first cost (with body) \$ 4,500.00
Replacement cost after each 100,000 miles (4 x \$2,500)* 10,000.00
\$14,500.00


Truck-Trailer Combination:


First cost (with body) \$ 2,740.00
Replacement cost of truck only, after each 50,000 miles (9 x \$785) 7,065.00
\$ 9,805.00

*No allowance has been made for replacing the heavy-duty truck body, although it may be necessary.

It costs \$4,695.00 less for ten trucks and one Trailer than it does for five straight trucks and one van body. The annual saving in depreciation with the Trailer is \$469.50.

SUMMARY OF COSTS PER YEAR

	
Initial Investment—	\$4,500
Depreciation	\$1,450.00
Gasoline	1,583.27
Maintenance	1,000.00
Total.....	\$4,033.27

	
Initial Investment—	\$2,740.00
Depreciation	\$ 980.50
Gasoline	1,117.58
Maintenance	575.00
Total.....	\$2,673.08

The Truck-Trailer thus saves \$1,360.19 over the heavy-duty truck in just one year (50,000 miles) in gasoline cost, maintenance and depreciation.

FRUEHAUF TRAILER COMPANY

World's Largest Builders of Truck-Trailers ★ Western Manufacturing Plant—Los Angeles

Sales and Service Branches ★ Los Angeles • Fresno • Phoenix • Seattle
Spokane • San Diego • San Francisco • Portland • Denver • Salt Lake City

Federal-owned Idle Tools To Be Sold...

IDLLE government-owned metal working machine tools are now to be sold, under the War Production Board's latest move. It has now become mandatory for all manufacturers having such equipment in their plants to report this information to WPB, and such portions of it as are not needed will become available for purchase. The order does not apply to privately owned machine tools.

Regional WPB offices on the Pacific Coast have sent out Form 3475 for reporting and early this month expect to have information available as to the quantity and type of tools available. Reports are required every 30 days from now on. The Redistribution Division of WPB will endeavor to refer information about idle tools to manufacturers having need of them.

According to instructions accompanying

WPB Form 3475, a machine tool is idle if it is not now working on war contracts and if there is no definite work on war contracts scheduled for the machine within the next 30 days. Unless a tool is definitely at work on war contracts, it is considered idle, even though it may be used to make farm equipment or other essential civilian products.

The mandatory report system is being initiated because fewer new machine tools are coming onto the market and because a need arises to produce some new weapons, tools will be available from those reported idle, rather than waiting for new machine tools to be produced.

Purpose of the order is largely to locate where idle machine tools are; it is not intended to be any "grabbing spree," WPB officials state, as the sponsoring military agency must first agree with the manufacturer before a tool can be declared definitely "available."

Army Sales

The Ninth Service Command Exchange Distribution Center has now established a permanent location at 625 El Camino Real, Palo Alto, California. The individual in contact is Captain Walter A. Haas, Jr., Palo Alto 2-4696. He outlines following procedure:

Government Agencies will be considered by preferred bidders on all available items. Anything not desired by such agencies will be offered to the general public at auction sales.

All items sold by the Distribution Center will be sold in accordance with WPB and OPA regulations.

Materials: All types of equipment and merchandise used in the operation of Army post exchanges. Types of equipment that will probably most generally be available may roughly be classified as office, store, restaurant, soda fountain, barber, tailor, service station, warehouse, and delivery equipment of all kinds.

In the Denver area, the only government agencies having surpluses are all sub-offices. Their head offices are: Ordnance, Philadelphia; U. S. Engineers, Omaha and Dallas; Aircraft Scheduling Unit, Wichita, Kansas.

Surplus inventories of the Redistribution Division of WPB on the Pacific Coast have shrunk considerably in steel and copper, but the aluminum supply more than doubled. Steel plates, sheets and cold finished bars continue in critical need, but structurals, cold and hot rolled strip, hot finished bars and wire are available.

March flow of materials in and out of WPB surplus stocks for the Coast was as follows:

Steel	20,977,000 lbs.	14,843,000 lbs.
Copper	1,487,800 lbs.	63,100 lbs.
Aluminum	32,060 lbs.	73,600 lbs.
Total, All Controlled Materials	22,496,860 lbs.	14,979,700 lbs.

Used machinery valued at \$2,067,000 was moved, about 50 per cent more than in February, and \$126,600 of miscellaneous materials.



permanently insulated

Like the Rhino, Rockbestos Wires and Cables are *permanently insulated* . . . not against the hazards of the jungle, but against the ever-present enemies of wire insulation. Over 100 types of wires, cables and cords are designed to withstand exposure to heat, corrosive fumes, smoke, oil, grease and fire. These enemies of ordinary insulation are no menace to *permanently insulated* Rockbestos Products. Rockbestos excellence comes of long years of experience in the exclusive manufacture of insulated wire. To this skill in fabrication is coupled the service of an extensive research department, ready at all times to make recommendations or to create special designs which may be required to fit your needs.

MARWOOD

Pacific Coast Agents

ROCKBESTOS PRODUCTS CORPORATION

SEATTLE

PORTLAND

SAN FRANCISCO

LOS ANGELES

798

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Check the advantages of Pomona Pumps' VERTICAL design!

Pomona Pumps offer many vital advantages over conventional types—vital no matter what your pumping application—agricultural, industrial, mining, municipal, marine, or any other. For example, their modern vertical design makes possible much greater convenience, safety, and efficiency on all types of pumping jobs...

NO PRIMING—NO "DRY PITS". The ideal way to eliminate priming in any pump is to have the pump below the fluid level. Fluid then flows by gravity into the pump chamber, assuring positive feed at all times.

In horizontal pumps the motor is alongside the pump (see below). Therefore, placing the pump below fluid level means placing the motor below fluid level. Then, to keep the motor dry, a costly "dry pit" is constructed for the unit. Even then, flood waters can fill the pit, ruin the motor

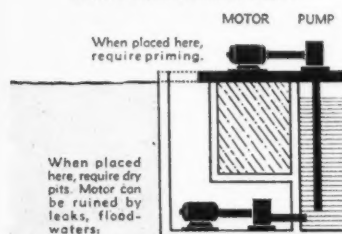
lead to increased pump investment, high maintenance, restricted service.

► In Pomona's the motor is *above*—not alongside—the pump. This means the pump can be *completely submerged* in the fluid where it is always primed... yet the motor is above fluid level, always dry, always convenient and no costly "dry pits" are needed. Thus, the Pomona vertical design combines the no-priming advantages of sub-surface pump position with the convenience and safety of above-surface motor location!

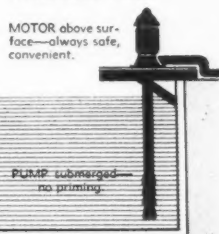
...and servicing is both complicated and inconvenient.

Or—to eliminate "dry pits"—horizontal pumps can be placed *above* fluid level. But then water no longer flows freely into the pump, so it must be primed whenever started, resulting in complications that

CONVENTIONAL PUMPS



POMONA PUMP



Pomona Pumps are one of the many types of mechanical, hydraulic and electrical power equipment produced by Hendy Divisions. Other products include Hendy steam turbines and Diesel engines, Westco pumps, and Crocker-Wheeler electric motors and generators.

POMONA PUMP DIVISION

JOSHUA HENDY IRON WORKS

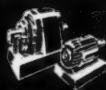
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POMONA, CALIFORNIA

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Hendy Products



MOTORS & GENERATORS
CROCKER-WHEELER
DIVISION



VERTICAL TURBINE PUMPS
POMONA PUMP
DIVISION



HORIZONTAL TURBINE PUMPS
WESTCO PUMP
DIVISION

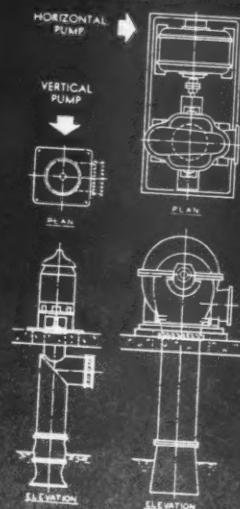


STEAM ENGINES, DIESELS
JOSHUA HENDY
DIVISION



STEAM ENGINES, DIESELS
JOSHUA HENDY
DIVISION

80% SAVING IN SPACE



The drawings above show how a Pomona Vertical compares in space requirements with a horizontal centrifugal pump handling identically the same capacity and head. The Pomona requires 16 sq. ft. of floor space—the horizontal, 80 sq. ft.—a direct saving of 80%!

Note the simple compact lines of the Pomona compared with the other pump. And also note this...the Pomona has fewer parts to service, and weighs only half as much. That means extra savings in foundation costs to add to the savings in installation, maintenance and operation.

No matter what your water-moving application, get the full story on Pomona Pump advantages before you invest in any pumping equipment. Send for booklet containing much helpful information!

WESTERNERS AT WORK...

Arizona

Clyde E. Weed, Naco, named president, Utah Metal and Tunnel Company and National Tunnel and Mines Company. . . . Charles R. Kuzell assumes new duties as consulting metallurgist and director of labor relations, Phelps Dodge Corporation, Douglas. J. B. Pullen in charge of Jerome operations of company.

California

John A. McCone, executive vice president, named president, The California Shipbuilding Corp., succeeding S. D. Bechtel who becomes chairman of the board of directors. Jerome K. Doolan, general manager, succeeds McCone. . . . Perry H. Taft, deputy Attorney-General, resigns to become regional representative at San Francisco for the Council of State Governments. . . . William R. Marshall appointed executive vice president, Pacific Electric Manufacturing Corp., San Francisco.

H. H. Harnish promoted from California supervisor, War Manpower Commission activities to California, Arizona, and Nevada supervisor. E. C. Rinehart, assistant Southern California WMC director made acting head of southland WMC operations. . . . Joseph B. Donnelly appointed president, Cresta Blanca Wine Company, Inc. . . . Wayne Lasher, resigns as secretary, Fresno County Agricultural Conservation Association to manage the Producers Cotton Oil Company cotton gin at Fresno. Lasher succeeded by Joseph Moehn, first administrative assistant.

Leland W. Cutler elected president of proposed \$25,000,000 War Trade Center, planned for construction in San Francisco; O. C. Hansen, vice president; Leland M. Kaiser, treasurer; M. A. Cremer, secretary. . . . William Ernest Strohmeier appointed District Director, Rail-Truck Conservation Section, Division of Railway Transport, with headquarters in San Francisco. District to include Northern California, Nevada, and Utah.

Ernest A. Moore, production superintendent, Ryan Aeronautical Company, presented one of 1943 Chamberlain Awards for outstanding industrial achievement. . . . Frank N. Belgrano, Jr., president, Central Bank, Oakland, appointed new Regional vice-chairman, Northern California Committee for Economic Development. . . . H. C. Diehl, pioneer research worker in frozen foods in Pacific Northwest for the government, more recently with Western Regional Laboratory, Department of Agriculture, Albany, California, now director of Refrigeration Research Foundation, office in Berkeley.

W. A. Cheshire appointed regional chief, Tank Truck Section, Office of Defense

Transportation's Division of Petroleum and Other Liquid Transport, headquarters in San Francisco. District to include California, Oregon, Washington, Nevada, Arizona, Idaho, and Utah. . . . Joseph J. Gallagher, executive secretary, appointed new manager for State Compensation Insurance Fund, succeeding John C. Stirrat who returns to the practice of law. . . . Guilford W. Koch new manager, San Jose Chamber of Commerce industrial department.

On WPB Industry Advisory Groups—Jess Robbins, Arpee Products Co., Glendale and T. A. Dear, Automatic Screw Machine Co., Los Angeles, on Screw Machine Products Industry Advisory Committee. . . . S. D. Russell, president, Phoenix Iron Works Company, Oakland, on Gray Iron Castings Industry Advisory Committee.

Colorado

Marlin E. Newlove appointed manager, Resurrection Mining Company, Leadville, replacing Arthur Kendall, named manager, Bagdad Copper Corporation, Hillside. . . . Oren Fulghum of Ouray has gone to McDermitt, Nevada, as engineer and technician for Cordero Mining Co. . . . Gilbert R. Richardson, formerly standards engineer, Boeing, Seattle, has joined staff, Union Mines Development Corporation, Grand Junction. David E. Cooper has joined engineering staff, same company, the new unit of Union Carbide and Carbon Corporation. . . . W. H. Forbes, until recently

in charge of Denver health and safety office, U. S. Bureau of Mines, has been employed by National Safety Council as industrial safety engineer. . . . Edward P. Chapman, Jr., has been appointed manager, Hayden Mining Company. . . . Benjamin F. Hill has been appointed consulting engineer of Golden Stars Mining Company. . . . R. L. Shimmin has gone to Ouray as metallurgical engineer, Sunshine Mining Company.

Idaho

Ralph M. H. Geumlek, formerly at engineering office, Salmon, now member, engineering staff, U. S. Smelting, Refining and Mining Company, Salt Lake City. . . . S. K. (Red) Droubay appointed manager, South Mountain Mining Company, Owyhee County.

Montana

Paul L. Anderson, who operates his own contracting and engineering business, is serving as labor supervisor for the War Food Administration, directly in charge of Mexican Nationals employed in states of Washington, Oregon, Montana and North and South Dakota. . . . Duncan J. McNeil is assistant engineer, Anaconda Copper Mining Company, Butte. . . . Cornelius F. Kelley, chairman of the board, Anaconda Copper Mining Co., presented Charles F. Rand Memorial Medal for "distinguished achievement in mining administration."

(Continued on page 50)



* On the job in the West are—top: Paul D. Hileman, manager, Thompson Products' West Coast plant; Wm. F. Breuer, regional salvage manager, War Production Board; Carroll E. French, director, new Industrial Relations Dept., Boeing. Bottom: Capt. Hector Griswold, U.S.N.R.; L. F. Bayer, vice president, Tide Water Associated Oil Company; Rear Admiral Henry F. Bruns, U.S.N.; Brig. Gen. Russell E. Randall, 4th Air Forces; and T. O. Edwards, Jr., superintendent, Associated's Avon Refinery.



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It's doubtful if any business would go to such extremes just to keep track of records! But if record transmittal is not properly systematized . . . if records do not reach the right people at the right time . . . both efficiency and production suffer.

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use or for machine written use. May be carbon interleaved or non-interleaved; may be used in Uarco Autographic Registers or in a typewriter, billing machine or tabulating machine. Uarco forms are especially designed to speed the flow of work by simplifying the tedious job of making and keeping records.

For your particular record problem, Uarco has a solution. With 50 years of business record experience, Uarco can offer you the most up-to-date assistance. It will cost you nothing to have a Uarco representative call today.

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FORMS FOR
HANDWRITTEN RECORDS



FORMS FOR
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FORMS FOR
BUSINESS MACHINE RECORDS



BETTER BUSINESS RECORDS

WESTERNERS (Cont'd from Pg. 48)

Nevada

Harry J. O'Carroll advanced from general foreman to assistant smelter superintendent, Nevada Mines Division, Kennecott Copper Corporation at McGill, and Edward Pesout promoted from assistant to smelter superintendent, same plant. . . . D. Wallace Stewart, formerly superintendent, technical service, Basic Magnesium Inc., Las Vegas, has gone to Canada where he is manager, Light Alloys, Ltd., Renfrew, Ontario.

New Mexico

John C. Kinnear, Jr., promoted to assistant smelter superintendent for Chino Mines

Division, Kennecott Mining Corporation at Hurley.

Oregon

Curtis Johnson appointed general superintendent, Marine Electric Company. . . . Jack F. Shields, formerly credit manager Arden Farms Company, Portland, now Pacific Northwest Manager for National Industrial Information Committee. . . . Frank B. Hawlow elected president, Eugene Fruit Growers Assn.

Utah

C. Arthur Carlson, Price, resigned position as chief coal mine inspector to accept position with the Spring Canyon Coal

Company. . . . J. D. Harlan, acting vice president and general manager of mine, appointed vice president and consulting mining engineer, and T. P. Billings, assistant general manager of metal mines, now Western mines manager, United States Smelting, Refining & Mining Co., Salt Lake City. . . . Fritz Nyman, Helper, appointed acting general superintendent, Utah Fuel Company. . . . E. S. Breckon, named field engineer for Kennecott Copper Corporation. . . . Roger H. Cook, assistant engineer in construction department, Columbia Steel Company, Provo.

Washington

L. E. Force elected president and general manager; G. Arch Kingsley, vice president; Corydon Wagner, vice president; E. W. Demarest, chairman of the board; W. B. Nettleton, secretary-treasurer, Douglas Fir Export Company. . . . H. D. Smith, Tacoma, elected president, succeeding Gordon Tongue, Seattle; H. E. Kerry, Seattle, elected vice president and F. P. Borden, Tacoma, executive secretary, Pacific Northwest Transportation Advisory Board. . . . Edward Curtis Wells, chief engineer, Boeing, named "Seattle's Young Man of the Year" by Seattle Junior Chamber of Commerce. . . . R. E. Kucker, vice president Olympic Foundry Company, Seattle, named member of Industry Advisory Committee for Gray Iron Castings by OPA.

Associations Elect

American Petroleum Institute, Pacific Coast section's production division: W. L. Jarvis, Texas Company engineer, elected chairman. . . . American Institute of Mining and Metallurgical Engineers, Montana section: E. McL. Tittmann, manager American Smelting, Refining and Mining Company at East Helena, Montana, elected chairman; F. W. Weimer, Great Falls, vice president; F. W. Strandberg, Butte, secretary-treasurer.

Truck-Trainer Manufacturers' Association: A. R. Trombly, president, Trombly Truck Equipment Company, Portland, and president, Northwest Trailer Manufacturers Association, elected vice president. . . . American Society of Tool Engineers, Los Angeles Chapter: A. J. Denis, Carbide Tool Mfg. Co., re-elected chairman; F. G. Jarvis, Douglas Aircraft, elected first vice chairman; Dick R. Lynch, Lockheed Aircraft, second vice-chairman; Ray Wade, North American Aviation, treasurer; and Arthur Lewis, Knu-Visc Products, secretary. . . . American Society of Tool Engineers, Golden Gate Chapter: Harold Wolman, chairman. . . . Harold Burlingame, first vice-chairman; Fred Martens, second vice chairman; Karl L. Bues, secretary; Henry Hagedorn, treasurer.

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This new-type, lighter-weight 85% Magnesia requires fewer man-hours for its application. Its "rind" surface is firm, yet soft enough to permit speedy embedding of tie wires. It cuts easily and quickly, even without canvas support and without chipping, crumbling or "powdering." Thus, after installation, less cleaning-up is required. Likewise, such features as its controlled uniformity and precision pipe fit help to speed and simplify application. Write today for complete engineering data.



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Army-Navy "E"
Awarded to
FACTORY No. 3
Emeryville, Calif.

Accident Liability In Plant Baseball . . .

THE promotion, or at least sanction, of inter-plant sports between employees in industrial establishments has much to recommend it, as a builder of morale and good will. But in permitting same, employers should give thought to their possible liability in case of resulting accidents. And, as examples of judicial reasoning on the subject, the following will serve.

By **LESLIE CHILDS**

In one case a company encouraged its employees to organize teams in the different departments for playing indoor baseball. The games were played in a company building, usually during lunch hours or when there was a short day as a half holiday.

WALWORTH LUBRICATED PLUG VALVES

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all pressures
all temperatures
all services*



Walworth Lubricated Plug Valves can be reasonably classed as all purpose valves of the plug cock type. Using insoluble lubricants they insure easy operation, tight seating, and resistance to corrosion and wear. These features are provided through the one simple operation of turning down the lubricant screw. This positively frees the plug from its seat automatically, and seals the parts against leakage.

Available in low cost design economically permits their use on so-called easy service.

Maintenance and replacement costs show substantial savings with this valve.

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The company did not furnish any of the equipment, nor did it officially recognize the sport. The players were all employees, and the custom had been going on for several years, when the claimant, an employee spectator, was struck by a bat that slipped from the hands of a player during a noon-day game, and lost an eye as the result.

The claimant applied for compensation on the grounds that the injury arose out of and in the course of his employment. The company denied liability, contending that it was no part of claimant's duty to watch the game. The lower court found for the claimant, and the higher court in affirming the award said:

What the Court Decided

"Claimant . . . argues the uncontradicted evidence shows the employer (company) by sponsoring and fostering these ball games, was raising the morale of the employees . . . all to the ultimate benefit of the employer . . . and accordingly the ball games were a recognized incident to the employment. . . .

"The rulings in foreign jurisdictions must be held to be conflicting in the application of the law to the facts similar to those in the case at issue. We must hold, however, that the greater weight of authority is to the effect that where an injury arises out of a settled practice or condition known to the employer, with which there is a casual relation between the injury and the employment, the injury is compensable. *** The judgment is affirmed." (40 S.W. 2d 608)

In another case the claimant, a girl, was employed by the hour by a manufacturing company. She was not paid for the lunch period, nor was she required to remain upon the premises during this time. However, upon the occasion in question, she did remain, and after eating lunch engaged in riding a small truck with other employees. She fell from the truck and suffered injuries for which she claimed compensation.

The evidence showed the practice of playing on these trucks during lunch hours had been going on for a considerable time. It was known to the foreman, and had become an established custom, without objection from the management. In holding the claimant entitled to compensation the court said:

The Reasoning of the Court

"It would perhaps not unduly extend the principle to say that the employer might, under some circumstances, have an interest in his employee's taking suitable exercise in a brief interval allowed for refreshment and rest.

"Inasmuch as the evidence must be regarded as establishing that the play in which plaintiff (claimant) was injured had become a settled custom, with the knowledge and indeed the express approval of

(Continued on Page 62)



"The high accomplishment of you men and women of the Los Angeles plant of the Soulé Steel Company is inspiring. Your record will be difficult to surpass, yet the Army and Navy have every confidence that it was made only to be broken."

JAMES FORRESTAL,
Under Secretary of the Navy.

*The "E" speaks for itself
we are proud of it!*

"E" AWARD

In making selection of a company to receive the "E" award, the Army and Navy considers the full utilization of available equipment, avoidance of stoppages; maintenance of fair labor standards; cooperation with the war program; effective management and engineering; record on accidents, health, sanitation and plant protection; utilization of subcontracting facilities and training of additional labor forces. Instituted in 1906 by the Navy as an award of excellence in gunnery, it is now awarded jointly by the Army and Navy to industry for excellence in war production.

It is with a feeling of immense pride that the employees and management of the Los Angeles plant of Soulé Steel Company receives the Army-Navy Production Award. The Army-Navy "E" flying over our plant, will symbolize to all that we are keeping faith; that in common with American industry we are pledging all our energies and skills to the end that our fighting men shall have the tools of Victory.

This is our promise, at a time when the tide is already running in favor of the United Nations, that we of the Soulé Steel Company will not rest on our laurels; that grateful for our country's recognition and honor, we will carry on, in the unshakable belief that Victory and Peace are the destiny of America.

To our employees now serving with the armed forces we pay tribute and voice our hope for their early return.

In grateful appreciation, Soulé Steel Company acknowledges its debt to its many suppliers and subcontractors, whose tireless energy and efficient cooperation have contributed so much to make possible the honors we are permitted to enjoy.

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A Good Safe Place to Work

Behind the Scenes in Southern California

MUCH of the super-duper personnel relations which are getting so much publicity stem from wartime operations, it is felt by some of the conservative type of employers, with workers being drawn from other plants as a result of the allurements held out. In many cases, they say, cost is no object and consequently such plants can offer more "free

service" than the rank and file, with resultant bad feelings.

Your "old-line" man is inclined to ask whether these so-called generous employers will be able to do all these things when the war ends, and when success or failure will depend on your delivered price for your product with another man's price. This day may seem far distant but actually

it is here in many lines. Some items are becoming highly competitive and some absolutely cut-throat.

For example, one manufacturer thought he had bid low on 18,000 units of a certain product at \$16, only to discover that there were bids of \$12, \$10, and even \$8. He felt these bids were way below cost and that the firms making them had previous war profits and were just "keeping open," expecting to bid on some later stuff at a profit. Another supposedly low man who bid \$275,000 on something else, lost the job to a firm from the Pacific Northwest at \$210,000, a price which he thought just covered actual material and labor cost.

Most firms are starting to cull out employees they don't want, although there are many lines where there is no opportunity yet to be choosy. Handling of colored workers is not an easy problem for employers, and one of the reasons is that their newspapers feature stories of race discrimination. For one case of giving colored women workers parties at lunch time and a bit of swing music as they work, there are others who feel that the only answer is to be exceedingly firm, although not to belittle them in any way.

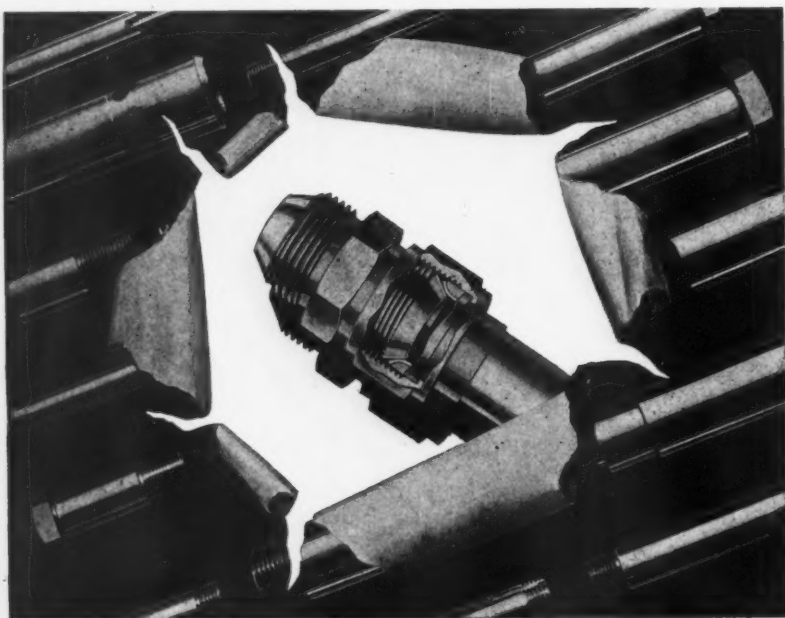
Regarding the future of the aircraft plants, there are as many guesses as days in the year. One observer says it is a question of how many of the "right kind of people" are employed in the plants, and the aircraft industry in general will be in good shape because they attracted some good men early. However, this man believes you just can't tell an able aviation engineer to design an icebox, because it isn't his line, and those who do start out in this direction will end up producing a refrigerator better than today's models but still far behind what GE, Westinghouse, Norge, Frigidaire and others are working on right now.

Because the aircraft plants are so strong on assembling, there are many things they can do, but although airplanes are regarded as being in mass production, apparently their methods do not yet approximate the mass production methods in use in the automotive industry. So for using the airframe plants for motorcar assembly, it seems to be yes and no.

Sour note in the whole deal is the financial end. Not having resources piled up like Ford and other automobile manufacturers, it seems to simmer down to four possibilities: (1) a larger profit on present operations to be saved up for the future; (2) government financing; (3) going to eastern capitalists; (4) floating securities on the West Coast.

Printer's Ink in its January 14, 1944 issue said:

"Airplane companies will make: New hydraulic and electric equipment for airplane manufacturers, electric refrigerators, ranges, gas ranges, kitchen sinks, small private airplanes, farm equipment other than implements and tractors, home appliances, family airplanes, farm tools and equipment, building construction,



A TOOLING TRIUMPH!

Pacific breaks an aircraft industry bottle neck. Steps up production from 2,000 to 20,000 per day on AN Type Flared Tube couplings—with less than one-half of 1% scrap. Pacific's better tooling methods made this possible.

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Largest and Best Equipped Screw Machine Plant in the West

automotive accessory, cinematographic equipment."

With all due respect to this highly-respected pioneer publication of the advertising world, the answer is "What with?"

Value of Western Oil Shale Deposits

In regard to the development of the oil shales in the Rocky Mountain region, reported from Washington in the April issue of *Western Industry* as about to be authorized by Congress, Per K. Frolich, president of the American Chemical Society, describes them as the most important in the United States.

In a paper entitled "Petroleum, past present and future" he states that a much larger potential supply of liquid hydrocarbons is obtainable from the oil shales in the United States than from the natural gas reserves, which are in turn equal to about 75 per cent of the proved reserves of petroleum. At the present rate of consumption, Mr. Frolich, who is director of the chemical division of the research laboratories of the Standard Oil Company of New Jersey, says the proven gas supply should last about 30 years, or twice as long as the oil supply.

"From 1925 to 1929 the Bureau of Mines experimented with the recovery of oil from Colorado shales," he reports. "Although no commercial scale production was undertaken, sufficient work was done to demonstrate the practicability of producing oil from this source. The oil obtained by retorting of shale differs from conventional crude oil in that it has a higher percentage of unsaturated hydrocarbons, a lower percentage of gasoline, a higher wax content, and relatively high content of phenolic compounds and nitrogen bases. Additional work therefore remains to be done on the development of satisfactory refining methods."

Gold Mining Relief

Permission to resume limited milling of ore to meet maintenance costs has been granted by WPB to two of the nation's largest gold producers, the Idaho Maryland and Empire Star mines at Grass Valley, California. Maintenance workers and miners non-essential to higher urgency war production were made available, also critical equipment, subject to prior call to military or other production. It was shown that the two mines included over 400 miles of underground tunnels and mining developments, that nearby communities were dependent upon the gold mining industry and that over 100 homes had been closed as a result of the stop order on gold mining. This step was taken to indicate that WPB's policy will be to give consideration to appeals from authorized producers who are faced with drastic losses to property.

YOUR Job is a WAR Job



Your job—and ours and every good American's—is to win the war as conclusively and as quickly as possible. Every man and woman engaged in American industry, in whatever capacity, is a Citizen Soldier charged with the duty to work full time, produce to the limit, and conserve vital materials and machines. It is a duty that will not be fully discharged until Victory is won. It's up to all of us to *stay on the job and finish the job.*

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The machines and equipment you use must be kept on the job top. To help you, we are producing vastly increased quantities of first quality lubricants for protective maintenance and more efficient operation. We are also developing new and remarkably better lubricants to meet today's requirements. Your Associated representative "knows the score" on wartime lubrication problems and their solution. His knowledge and experience are at your disposal, without obligation, at all times.


**GASOLINE POWERS THE ATTACK
—DON'T WASTE A DROP!**



TIDE WATER ASSOCIATED OIL COMPANY

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CYCOL INDUSTRIAL LUBRICANTS • ASSOCIATED AVIATION ETHYL AND
FLYING A GASOLINES • FISK TIRES • AERO BATTERIES

Fight to Keep Basic In Full Production...

SENATOR McCARRAN of Nevada is making the fur fly in his efforts to keep WPB from putting into effect its proposed order (forecast in the April issue of *Western Industry*) closing down four units of the monster Basic Magnesium, Inc., plant at Las Vegas, Nevada, following the reduction in magnesium output ordered elsewhere.

Reasons assigned by Phillip Wilson, head of the magnesium and aluminum division of WPB, are: (1) a shortage of oil in the West which would be relieved by utilizing the hydro-electric power from Boulder Dam now used by the four units instead of allowing two steam power plants at Los Angeles to consume oil needlessly; (2) the shut-down at BMI would release 1500 men to relieve the labor shortage at Los Angeles; (3) transportation of magnesium from BMI to the East is an economic loss and is creating a bottleneck, and hauling peat moss from Canada wastes transportation needlessly.

Senator McCarran learned that Petroleum Administrator Ickes wrote Donald Nelson the saving in oil would be inconsequential and that gas will soon be avail-

able in Los Angeles to operate the steam plants; that Paul McNutt, War Manpower Commissioner, advised there is no housing available in the Los Angeles area for additional workers; that five cars a day will move all the magnesium that can be produced at BMI and that 60 to 70 per cent of the 600 eastbound freight cars passing Las Vegas every day are empty; and that Anaconda is steadily reducing its use of peat moss and will shortly dispense with it altogether.

Despite the extravagance and inefficiencies of the early days of the project, which the Truman Committee said had made a \$63,000,000 project cost nearly twice that much, the Anaconda Copper Company management has been making steady gains in efficiency. These eventually may challenge the Truman Committee's assertion that the capital expenditures and expenses of transporting the ore 350 miles place a handicap on the project which alone make it difficult to compete with other projects.

It is asserted by Senator McCarran that in January BMI produced metallic magnesium at a cost of \$0.1975 a pound, and the Truman Committee reported that Ana-

conda had reduced the cost from \$0.316 in June 1943 to \$0.235 in November.

"It should be noted," says the Committee, "that the foregoing costs do not include amortization of plant facilities, which of course are borne by both Dow Chemical and Permanente Metals Corporation in the operation of their privately owned plants."

"Although the cost is still above the \$0.205 per pound (Editor's note: Senator McCarran's later figures brings BMI below that figure) at which Dow Chemical is selling magnesium produced in its privately owned plants and the \$0.124 per pound cost of producing magnesium in the plant operated for the Government by Dow Chemical at Velasco, Texas, it is substantially lower than the cost of producing magnesium to date by either the ferrosilicon or the carbothermic processes."

The Truman Committee notes several objections to the BMI project besides the squandering of money in the days before Anaconda was called in to bring order out of chaos. One of these is that it should have been located near Lake Meade, where it would not have been necessary to run a 40-inch pipe line over the mountains for pumping water nor build two 15-mile 230,000-volt transmission lines.

"It is also obvious," say the Committee, "that the plant was wrongly located on the site itself, in that the railroad terminal is

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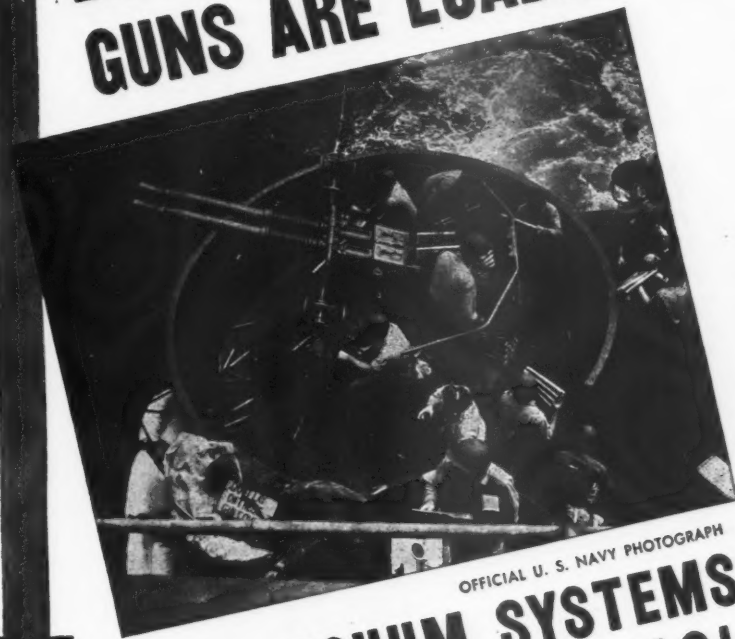
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THE SPEEDMETERS OF INDUSTRY

BEFORE THE GUNS ARE LOADED . . .



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AIR APPLIANCE DIVISION, 92 EAST 12TH ST., NEW YORK 3, N. Y.

at the lowest point and all materials entering into the construction and operation of the plant must be carried upgrade to their point of use . . . proper consideration was not given to prevailing winds in the area and the corrosive fumes of chlorine are carried against the expensive transformer and distribution equipment with a deteriorating and injurious effect."

Machining Problems In Magnesium

The questions as to what types of tool steel are best for cutting tools for magnesium, and what cutting angles and clearance angles are best for flat drills, were recently submitted to the San Francisco office of Smaller War Plants Corporation technical advisory service in San Francisco by a manufacturer of cutting tools for machining magnesium incendiary bombs.

Tungsten carbide tipped tools and other alloys for high production work were generally recommended by the authorities from the SWPC consulted. One source advised that tools used for machining magnesium should have the following characteristics: (1) smooth faces, (2) large peripheral clearances, (3) large chip spaces, (4) small areas of tool in contact with the work, and (5) comparatively small rake angles (undercuts).

Tool materials were rated by one source in the following manner in order of increasing tool life: (1) high-speed steels, (2) high-speed steels plus surface treatments, (3) non-ferrous tool materials, (4) carbide-tipped tools.

Compared to the average cutter, the milling cutters for magnesium should have less teeth, more undercut, greater angle of spiral, and more chip space, was the opinion from another source.

One metallurgist advised against the use of flat drills for magnesium, recommending instead spiral drills for ordinary or shallow depth holes and fast spiral drill for rapid chip removal, saying it was necessary to use extreme clearance and regular angles for the free cutting of magnesium.

Consolidated's First Postwar Plane

A 48-passenger commercial transport plane has been announced by Consolidated Vultee Aircraft Corporation as its first postwar ship. This Model 39 incorporates the Davis wing, power-plant and landing gear of the Convair Liberator bomber together with a specially designed fuselage. It is designed for long range operations and will carry 48 passengers with baggage and 1200 pounds of mail on flights up to 2500 miles. As a sleeper plane, it will accommodate 24 passengers and a cargo version is expected to carry a payload of 12,000 pounds over similar distances.

Normal cruising speed for the ship will be 240 miles per hour contrasted with 180 miles per hour for present day planes.

WESTERN MARKETERS AND MARKETING

A monthly column devoted to the promotional and advertising plans of western manufacturers

Dar Johnson has been newly appointed sales and advertising manager for *Willamette-Hyster Co.*, Portland, Ore. and Peoria, Ill., filling the vacancy created when Manfred Pate resigned to join the Royce MacCandless Agency. Johnson was formerly public relations and industrial promotion manager for the Peoria Journal Transcript.

Now associated with the *Knollin Advertising Agency*, San Francisco, is Norman Erickson as art director, and Thomas J. McNamara as account executive. Erickson comes from Chicago where he operated his own studios; McNamara from the San Francisco office of J. Walter Thompson.

Replacing Ralph Dorland as manager of production and promotion for *Western Industry* is Robert C. Williams, formerly advertising manager of Stauffer Chemical Co., San Francisco. Dorland resigned to join the merchant marine.

New president of the Los Angeles chapter of the *National Industrial Advertisers Ass'n* is R. Calvert Haws, manager of ad-

vertising and sales promotion for *Western Precipitation Corp.*

Altec Lansing Corp., Los Angeles, account, electronic equipment, to the Davis & Beaven agency. The campaign in industrial journals and direct mail will be supervised by Ford C. McElligott.

The *Olds Alloys Co.*, South Gate, Calif., has appointed the *Darwin H. Clark* agency to supervise its advertising. Media will be national industrial publications.

To the *Hillman-Shane & Breyer* agency, Los Angeles, as manager goes Hassell Smith, formerly manager of the L. A. office of Botsford, Constantine & Gardner.

The *Davis-Beaven Agency*, Los Angeles, adds Jerry Coleman to its staff as head of the planning board. Coleman was formerly advertising manager for White King Soap Company.

Malcolm Dewees retires as Pacific Coast manager for Kelly, Nason & Roosevelt to join the San Francisco office of *Botsford, Constantine & Gardner*.

Add to list of accounts serviced by Brischner, Van Norden & Staff, San Francisco, the *Ray Oil Burner Co.*, same city.

Lloyd Thorpe, assistant advertising manager of *Weyerhaeuser Timber Co.*, has been elected president of the *Tacoma Advertising and Sales Club*.

Frederick Henning, who has been operating his own agency in San Francisco, has joined forces with the *Garfield & Guild Advertising Agency*.

Drop and Pick-up Air Mail Without Stopping

Permission to provide airmail and express cargo service to more than 100 California cities not previously served by air transportation facilities is being applied for by the Ryan School of Aeronautics at San Diego. Plans call for operation of twin-engine aircraft equipped with an aerial pick-up device after the method of taking on mail pouches from a moving train, for service at communities between the regular landing stops. No landing field, only an unobstructed area for flying close to the ground, would be necessary at such points.

The pick-up unit in the plane consists of an electrically operated winch with a shock-absorbing device, a rope and a pick-up arm, which retracts into the bottom of the plane when not in use. Approaching the pick-up station at an altitude of only 20 feet, the pilot trips a release and the fiber-encased delivery container drops to the ground.

At the same time the arm with the pick-up hook strikes a transfer loop suspended between two 14-foot upright poles, setting in motion the energy-absorbing device on the unit in the cabin. This operation absorbs the shock of contact to such an extent that it is hardly noticed in the plane. After the pick-up is made the container is automatically pulled into the plane by the electrically operated winch.



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The **PUNCH-LOK** Hose Clamp is a mechanical device for clamping fittings, menders, or ordinary pipe to a hose. A broad, flat, high tensile strength galvanized steel band is double-wrapped around the joint. After tensioning with a pull of 1000 pounds within the **LOCKING-TOOL**, the ends are securely locked together under tension without loss of tension. The excess band is then cut off flush with the Lok so that the entire joint is streamlined for safety.

Once the **PUNCH-LOK** Hose Clamp has been locked, vibration or rough handling cannot loosen it. There is no possibility of injuring or cutting the hose in any way—the clamp will outwear the hose—and the cost is no more than the ordinary clamp of yesterday. Stop your hose leaks and troubles with **PUNCH-LOK**.

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Write today to Department B for illustrated folder or contact Harry M. Thomas, Pacific Coast Representative, 1554 Oakland Avenue, Piedmont 11, California, for the name of your nearest distributor.



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Post-War Home Planning Now

"Home planning institutes" are the means being used by the West Coast Lumberman's Association to encourage general interest now in home building after the war. Portland was the pilot city, and the institute there was sponsored also by the Equitable Savings and Loan Association, and the Western Retail Lumbermen's Association, while architects, furniture, labor and other groups endorsed it.

Enrollees in these institutes are organized into groups to meet once a month or oftener to hear lectures by experts and join in discussions on such phases of building as selecting the homesite, financing, architectural designs, selection of the contractor, choice of materials, plumbing, wiring, appliances, landscaping, etc.

Prospective home owners are invited to register and work out a schedule of monthly savings which will accumulate the first payment on a home within two years. Institutes have been organized also in Los Angeles, San Diego, Santa Barbara, Pasadena, San Jose, Tucson, Phoenix, Denver, Eugene, Seattle and other cities with considerable interest manifested everywhere.

Alcohol Hopes Dimmed

Two Colorado concerns are still trying to find out why they have never been able to get WPB approval to make industrial alcohol from grain for the war effort. They are Con Moore, who has a distillery at Arvada, and the Lafayette Solvents Corporation of Lafayette. The former is quoted as saying that only \$17,000 in construction costs would have yielded 1,820,000 gallons of alcohol annually from his plant, while the latter bought part of their equipment, got over the first WPB hurdle of being less than a mile from a coal mine, but were stopped by being told they would have to be near a navigable stream.

Plywood Purchase

The largest individual plywood manufacturing plant in the world, the Evans Products Co. factory at Lebanon, Ore., has been sold to the newly organized Cascades Plywood Corp. of Portland, headed by M. D. Tucker, former vice-president and director of the Evans company. Amount involved in the sale was more than \$2,000,000. In turn, the United States Plywood Corporation has contracted to sell the entire production of the plant under its own brand. Average annual capacity of the plant is 120 million square feet.

Industrial Engineers

State registration of industrial engineers, examination by a state board, and the empaneling of such engineers to serve in post-war program planning is being urged by the Los Angeles chapter of the American Society of Industrial Engineers, of which R. Trumpis is chairman.

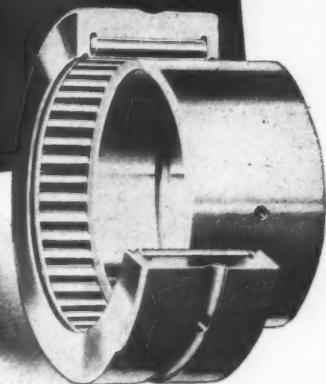
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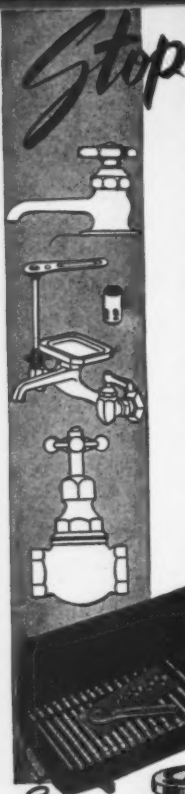


Write for New Bulletin SM-42

FACTORY BRANCHES: Casey Bearing Company, 406 Golden Gate Avenue, San Francisco, California; Casey Bearing Company, 1202 East Olympic Boulevard, Los Angeles, California; The Bearing House, 318 16th Street, Sacramento, California; R. D. Tripple, 531 Malden Avenue, Seattle, Washington; Casey Bearing Company, 372 24th Street, Oakland, California

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Business Books

Plastic Working In Presses, by E. V. Crane. Third edition of a book on plastic working of metals and non-metallic materials in presses. Tells how and why plastics and metals move and are moved, planning operations, dies and molds, illustrations of tools, equipment and methods. Price \$5.00. *John Wiley & Sons, Inc., 440 Fourth Avenue, New York, N. Y.*

Work Methods Manual, by Ralph M. Barnes. A guide for supervisors, foremen and workers on the principles of work organization and motion economy. How to do the job with greater economy and efficiency, with less effort. Price \$1.75. *John Wiley & Sons, Inc., 440 Fourth Avenue, New York, N. Y.*

Employee Counseling, a Survey of a New Development in Personnel Relations, by Helen Baker. Deals with the growth and aims of counseling programs in industry and government, duties of employee counselors, the place of a counseling program in the organization, and the counseling staff. Price \$1.00. *Industrial Relations Section, Dept. of Economics and Social Institutions, Princeton University, Princeton, N. J.*

Aluminum, An Industrial Marketing Appraisal, by Nathanael H. Engle, Homer E. Gregory, Robert Mosse. A postwar case study. Answers such questions as: Clay or Bauxite as the raw material of the future? What does it cost to make a pound of aluminum? What are the economic prospects for the new Pacific Northwest industry? How large a postwar market can be anticipated? Price \$6.00. *Bureau of Business Research, College of Economics and Business, University of Washington, Seattle 5, Washington.*

1943 Wage and House Manual. An up-to-date guide to wage and hour regulations. A compilation of all regulations and rulings applying to war time wages and hours, indexed for convenient reference. Price \$7.50. *The Bureau of National Affairs, 2201 M Street N.W., Washington 7, D.C.*

The Pacific Ocean Handbook, by Professor Eliot G. Mears. An up-to-date almanac and geography, containing 60 maps and illustrations of the area and a valuable appendix for navigators, travelers and fighting men in the Pacific theater. Price \$1.03. *James Ladd Delkin, Box 55, Stanford University, California.*

Why Race Riots? Lessons from Detroit. By Earl Brown. A Public Affairs pamphlet in which the author outlines a comprehensive social and economic program for relieving racial tensions. Price 10c. *Public Affairs Committee, Inc., 30 Rockefeller Plaza, New York 20, N. Y.*

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Visions West Coast Cotton Industry

Development of the garment industry on the Pacific Coast may well be followed by cotton spinning, according to H. M. Towar, a former eastern cotton mill operator and later a buyer of California and Arizona cotton for eastern mills.

California cotton was formerly sold abroad and never found favor in domestic mills, for two reasons, according to Mr. Towar. First is the fact that it is whiter, causing streaks when blended and spun with "rain grown cotton" such as comes from the southern states. Second is that being ginned in a dry climate it contains only about two percent moisture, compared with the 7 to 7½ percent moisture content of the cotton from a humid climate. Consequently it must be humidified and eastern mills were not interested in this extra operation.

Advantages that the California cotton possesses are high farm output, 577 pounds to the acre average for the last ten years, compared with a national average of 217 pounds; freedom from boll weevil; freedom from crop failure because irrigation takes the place of rain; and a pure bred seed law.

The only cotton mills the Pacific Coast has had are those of the custom type, whereas Mr. Towar visions mills producing on a large scale for the rapidly-growing garment trade and also for industrial uses, such as sugar sacks.

Television Site For Radio Testing

Because certain of the new and secret types of radio operate on a "line of sight" basis, with a beam which is broken by hills or buildings, Lockheed Aircraft Corporation have opened a \$100,000 operational testing station on a summit in the Santa Monica Mountains, six miles from the main Lockheed final assembly plants in Burbank.

Complete modern equipment including 14 receiving sets and seven transmitters allows the station to operate across the entire range of radio frequencies, including some which still are largely theoretical or experimental. Three operator positions are manned 24 hours daily.

Tests cover the frequency measurement of each radio transmitter with a hair-line accuracy, modulation, quality, and all functions of each set including emergency power supply and inter-phone equipment on bombers.

Welded Box Cars

Welding will be used extensively after the war to build lightweight box cars that will save up to 20 per cent in weight and increase payloads correspondingly, Wallace N. Barker, vice president of Pullman-Standard Car Manufacturing Company, predicts.



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ACCIDENT LIABILITY (From Pg. 52)

the foreman in charge of the department * * *, the court is of the opinion that her injury may be regarded, not only as having occurred in the course of her employment, but as having arisen out of it." (179 Pac. 372)

The court holdings on the subject here involved are not precisely in accord. How-

ever, there is much judicial authority, if not the weight, that takes the position that where an employer permits inter-plant sports upon his premises during the hours of employment, as at rest periods, he cannot escape some risk of liability if injury results. Especially so, where such practices become in fact a custom and openly indulged in by employees without objection.

Clearly then, this potential source of liability should be taken into account in situations of this kind, and the risk covered by insurance or otherwise as the circumstances permit. Otherwise, an employer may quite easily find himself saddled with an unexpected liability in case of an accident from the sports or play of his employees.

Increased Labor Force

The total civilian labor force in California including the unemployed, increased from 2,905,000 in 1940 to 3,435,000 in 1943 according to estimates completed recently by the Division of Labor Statistics and Law Enforcement. The increase in the total number of employed persons was even greater, from 2,482,000 in April 1940, to 3,375,000 in June, 1943. The recruitment of women workers to the labor force constituted the principal source of expansion. The rise in the total number of employed women has been from 634,000 in 1940 to 1,090,000 in 1943, an increase of 72 per cent. Of the 456,000 women who entered or rejoined the ranks of the employed between April, 1940 and June, 1943, 234,000 or 51 per cent, went to work in manufacturing industries.

Safety Record

An enviable safety record, based on 65 million man-hours of labor, is reported by the three West Coast shipyards of the Bethlehem Steel Company, at which not one fatal accident occurred in 1943.

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Successful businesses operate Research Departments to assemble technical and factual material before deciding on new products, new processes, new markets, or new management policies. We offer to act as your Research Department to give you a Research Service, national in scope, at remarkably low cost.

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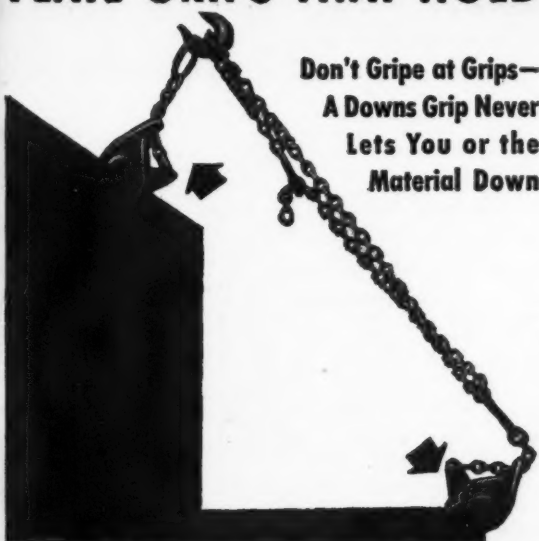
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THE WESTERN OUTLOOK...NEWS...STATISTICS.

THE PICTURE

First statistical indications that war production volume on the Pacific Coast may be declining came in the February WPB contract totals, indicating a slight drop from January, although several month's figures will be needed for definite proof. Electric power figures showed a slight decrease also, although this may be purely seasonal, and the slight downward trend in employment figures is not necessarily representative, as aircraft output increased despite a shrinkage in the labor force in that industry, and carloadings move in an upward curve.

Aircraft—10.9 Per Cent Higher

A new all-time record output, representing a jump of 10.9 per cent in production for March over February was reported by the West Coast airframe plants. This was partly the result of more working days in the month, and April consequently may show a slight decline on that account. On the other hand, increased efficiency may offset the difference. The March output was 2,703 planes, a gain of 134 planes over February. This represents a total of 36,015,200 pounds of airframes moved off the assembly line, 3,546,200 pounds more than in February.

	No. of Planes	Total Pounds
December 1943	2,527	30,880,000
January, 1944	2,559	31,892,000
February	2,569	32,469,000
March	2,703	36,015,200

Lumber—Pursuing the Japs

Two new facts appeared prominently in the West Coast lumber situation during March, according to the West Coast Lumbermen's Association. First, an enormous program of shore installations on the Pacific Coast, in the form of ammunition depots, railroad loading docks, and related structures, as part of large scale preparations for the cleanup in the Pacific, loomed large in the West Coast lumber picture. Second, the necessity for further conversion of West Coast lumber manufacture to production of boards, to supply box and crating lumber for offshore invasion needs, 25 to 30 per cent of the industry's production now being called for in this form. March saw the industry speeding changeover from normal manufacture to meet urgent requirements, not only for shipping material, but for lumber to replace bombed-out structures.

The West Coast lumber industry is still holding a production lead of 20 per cent over the same period of 1943, the first 13 weeks of the year.

Cumulative figures for 13 weeks in 1944 in thousand board feet are as follows:

	1942	1943	1944
Production	2,148,493	1,670,343	2,092,202
Orders (net)	2,450,777	1,804,442	2,257,825
Shipments	2,254,081	1,758,434	2,094,266

Western Pine Association figures covering Idaho White Pine, Ponderosa Pine, Sugar Pine and associated species for the current year to April 8 are as follows:

	1943	1944
Orders	1,103,477	1,089,964
Shipments	1,057,315	1,065,352
Production	781,958	867,911

Ships—Output Steady

Merchant ship construction on the Pacific Coast maintained its previous rate in March, and there were 14 more ships delivered than in February, but this was due more to some of the last Liberty ships and the delivery figure is expected to decline as the yards get deeper into the Victory ship program. The actual launchings in March totaled 61, only two more than in February, and there were two less keels laid, the March figure being 58. March ocean-going vessel deliveries reported below do not include four barges:

	No. of ships	Thousands of deadweight tons
January, 1943	54	530
February	70	641
March	80	772
April	78	792
May	84	816
June	81	869
July	77	844
August	85	989
September	90	838
October	76	787
November	78	776
December	95	969
January, 1944	67	633
February	59	585
March	73	679

(Includes destroyer escorts and small aircraft carriers, but not larger naval vessels built by the navy itself. Also includes concrete barges, but not tug or wooden barges. Tonnage figures from September on are adjusted, previous months unadjusted. Deadweight tons are used as a rough measure of the cargo carrying capacity of the ship. All figures from U. S. Maritime Commission statistical department.)

Fibre Containers—Shipments

Shipments of corrugated and solid fibre containers for the three coast states, and Nevada, Idaho and Arizona for January, 1944, amounted to 27,836 tons, slightly above the six-month average for the last six months of the year.

War Production Contracts—3 Per Cent Decline in February

In Thousands of Dollars—Source: War Production Board Statistical Division

NOTE: The monthly award figures shown below represent only an approximation of the actual contracts, because cut-backs and cancellations are usually on previous awards, although reported in the current month. Also there is considerable lag in the reporting of individual contracts. However, WESTERN INDUSTRY is reporting the monthly awards by the successive subtraction method as an approximation.

	MONTANA All Other	IDAHO Ships All Other	WYOMING All Other	COLORADO Aircraft Ships All Other	N. MEX. All Other	ARIZONA Aircraft Ships All Other	UTAH Aircraft All Other	NEVADA Ships All Other				
July	852	1,319	5,659	56	1,522	142	10,000	1,399				
August	...	926	693	263	...	586				
September	472	263	3,367	587	4,363	...	847	2,204				
October	2,770	329	757	280	6,185	178	...	1,643				
November	611	134	67	263	5,488	860	...	6,078				
December	1,778	1,007	4,694	...	6,969	319	5,826	373				
January	...	370	1,239	...	125,636	824	112	66				
February	1,384	52	7,858	241	374	...	208	175				
Total from June, 1940	15,773	639	8,144	1,366	2,067	388,608	4,080	38,599				
						387	23,065	847				
							167,164	156				
								17,829				
	WASHINGTON Aircraft Ships All Other	OREGON Aircraft Ships All Other	CALIFORNIA Aircraft Ships All Other	TOTAL Aircraft Ships All Other								
July	616	11,339	24,859	688	40,816	5,285	850,816	13,076	57,984	860,744	42,609	101,304
August	5,000	136,822	9,198	...	179,578	31,624	625,192	66,030	242,897	630,192	382,430	287,721
September	4,716	12,305	22,554	...	4,147	7,652	81,700	38,378	79,449	86,418	55,817	131,704
October	2,869	9,762	10,469	28	23,908	19,246	27,738	198,299	55,374	32,895	233,285	105,819
November	517,863	22,474	15,703	842	181,408	4,757	16,032	65,377	589,377	369,331	44,236	...
December	319	6,006	74,929	...	46,521	8,392	59,345	15,051	237,041	67,045	322,855	...
January	...	1,549	23,782	...	7,803	12,600	2,390	230,712	46,041	2,390	290,176	211,46
February	...	84,257	74,558	...	6,602	1,760	221,910	142,683	26,174	221,910	233,569	34,56
Total from June, 1940	1,881,983	1,930,231	367,439	1,202	1,076,457	137,795	8,999,513	4,094,284	1,500,204	10,923,510	7,164,221	2,659,753

Electric Energy—20.9 Per cent Above a Year Ago

Production of Electric Energy for Public Use—In Thousands of Kilowatt Hours—Source: Federal Power Commission

	Montana	Idaho	Wyoming	Colorado	New Mexico	Arizona	Utah	Nevada	Total Mtn.	Washington	Oregon	California	Total Pacific
January, 1943	213,639	102,021	19,710	89,021	37,364	309,377	61,383	235,346	1,068,351	661,838	358,264	977,670	1,997,772
February	195,179	96,982	18,054	79,624	34,948	190,949	44,459	212,981	872,376	616,219	327,065	996,819	1,946,103
March	211,314	97,621	19,452	87,336	36,969	216,865	59,058	265,277	894,283	682,966	358,817	1,107,202	2,159,985
April	181,181	118,987	30,292	83,131	38,728	232,445	49,104	247,139	959,947	682,966	348,953	1,132,227	2,164,146
May	205,005	125,700	26,558	81,677	38,266	265,685	47,694	269,825	1,058,810	698,471	389,494	1,239,405	2,337,189
June	201,687	115,247	29,316	78,842	38,428	230,262	45,862	274,148	1,067,798	697,763	370,826	1,272,391	2,340,180
July	217,075	125,272	34,675	85,945	40,758	238,528	48,909	274,702	1,147,661	704,949	393,453	1,365,434	2,462,836
August	235,592	122,753	35,135	87,053	43,854	264,410	55,787	286,111	1,124,696	701,848	419,192	1,419,261	2,540,241
September	225,227	117,105	32,928	89,863	41,255	276,091	46,832	260,991	1,081,352	730,776	406,871	1,362,769	2,552,410
October	244,685	110,958	36,972	93,891	40,270	300,702	50,762	284,437	1,145,877	831,395	430,335	1,371,561	2,579,141
November	234,174	105,282	20,338	94,670	38,336	279,389	52,025	299,159	1,123,373	860,185	419,929	1,277,015	2,557,109
December	230,376	106,406	20,951	97,429	41,999	294,909	60,995	320,207	1,173,172	960,810	398,186	1,365,850	2,664,946
January, 1944	223,286	94,952	19,417	96,960	42,346	290,085	57,904	331,055	1,155,925	964,314	406,851	1,281,484	2,652,040
February	202,223	84,838	18,065	87,644	37,891	292,184	50,551	314,546	1,087,742	929,238	376,582	1,200,331	2,506,941

FROM THE RESEARCH DIVISION OF WESTERN INDUSTRY

Employment—Year-End Figures Match Up with Level of Last Spring

Estimated Number of Employees in Non-Agricultural Establishments—In Thousands—Source: U. S. Bureau of Labor Statistics

ALL INDUSTRY DIVISIONS

	Montana	Idaho	Wyoming	Colorado	New Mexico	Arizona	Utah	Nevada	Total Mountain	Washington	Oregon	California	Total Pacific
January, 1943.	110	105.0	57.0	288	80.3	111.7	182	43.8	978	638	339	2,611	3,588
February	110	106.3	57.8	278	79.5	112.6	174	45.0	965	634	341	2,642	3,617
March	110	101.9	58.6	281	78.6	112.2	173	48.3	964	646	348	2,663	3,657
April	110	104.3	59.0	282	78.9	114.1	171	47.1	966	648	349	2,685	3,682
May	111	106.6	60.5	280	78.3	118.9	173	47.4	976	643	351	2,694	3,688
June	112	101.3	61.4	285	79.1	116.2	173	47.3	974	655	361	2,726	3,742
July	112	100.4	61.0	284	81.8	112.4	180	44.8	976	673	362	2,734	3,769
August	113	98.4	61.9	287	83.2	108.7	178	41.9	973	685	361	2,776	3,802
September	115	102.0	62.1	290	80.7	107.6	175	44.0	976	675	362	2,717	3,754
October	114	101.4	62.1	288	79.8	109.2	172	42.1	969	667	350	2,702	3,719
November	114	100.5	62.1	282	79.0	111.0	168	43.1	960	666	344	2,691	3,701
December	114	98.8	61.6	279	79.0	111.0	165	41.7	950	666	345	2,696	3,707

MANUFACTURING

	Montana	Idaho	Wyoming	Colorado	New Mexico	Arizona	Utah	Nevada	Total Mountain	Washington	Oregon	California	Total Pacific
January, 1943.	15.1	11.8	3.7	66.5	4.4	12.7	30.8	1.7	147	259	145	1,002	1,406
February	14.5	11.9	3.7	64.2	4.5	12.8	30.6	2.0	144	255	145	1,022	1,422
March	14.3	11.8	3.7	63.4	4.5	12.6	30.5	4.2	145	257	147	1,036	1,440
April	14.2	12.2	3.7	63.9	4.4	12.5	31.2	4.5	147	256	147.2	1,052	1,455
May	14.4	14.0	3.8	65.0	4.5	13.1	30.8	4.9	149	255	148	1,056	1,458
June	14.5	15.2	3.9	67.0	4.7	13.5	40.4	5.2	164	274	157.3	1,080	1,511
July	15.2	14.2	3.9	67.0	4.6	13.4	36.9	5.0	160	271	157.9	1,142	1,571
August	15.2	15.8	3.9	68.5	4.3	13.2	35.8	5.1	162	279	161.3	1,088	1,528
September	15.9	15.7	4.3	69.2	4.3	13.6	36.4	4.8	164	278	150.8	1,066	1,495
October	15.8	14.9	4.5	65.0	4.9	16.5	32.1	5.0	159	277	146.6	1,052	1,476
November	15.0	14.3	4.0	58.6	4.9	16.5	32.2	4.7	146	273	145.0	1,034	1,453

Although continued declines in manufacturing employment in California were reported by the Division of Labor Statistics for February from the January levels, the figures indicated a slow trend more than a sharp drop. Total manufacturing employment was 862,200, or 8,400 less than in January, a percentage decline of .9 per cent, while the durable goods industries had 698,600 employed in February, which is 6,988, or 1.3 per cent less than in January.

Aircraft and shipbuilding accounted for the major part of the decrease, but every industry in the durable category lost workers except the nonferrous metals and electrical machinery groups. The losses in the Los Angeles industrial area in the durable goods class totaled 5,600, in the San Francisco Bay area 2,600.

In women workers, the decrease was 2,600 in the aircraft plants and 300 in the private shipyards, but in nondurable goods plants there was a gain of 900. Loss of 6,300 male wage earners from manufacturing industries as a whole was at approximately the same rate as the decrease in women, leaving the ratio of women to total wage earners unchanged at 27.8 per cent.

Monthly figures for the California durable goods industries as a whole are as follows:

	San Francisco Bay Area	Los Angeles Indus'l Area	Total State
Jan. 1943	205,900	336,000	651,600
February	218,100	346,800	677,300
March	221,600	356,300	695,400
April	220,400	361,300	698,800
May	219,300	363,500	702,200
June	226,600	365,000	713,900
July	228,200	367,400	718,300
August	229,700	379,900	724,300
September	227,800	366,700	710,200
October	228,300	365,800	708,400
November	229,300	366,300	709,300
December	225,300	365,300	701,100
Jan. 1944	221,200	369,200	698,800
February	218,600	363,600	689,600

Cement—Output Off

Production, shipment and stocks of finished cement are reported by the Bureau of Mines as follows (in thousands of barrels):

February:	—California—		Ore.-Wash.	
	1943	1944	1943	1944
Production	1,561	1,000	446	291
Shipment	1,498	1,013	508	273
Stocks	1,319	1,535	499	482
Two months:				
Production	3,301	2,080	753	608
Shipments	3,113	2,095	869	572

SWPC—Contracts Reported

Smaller War Plants Corporation distribution for northern California, Nevada, Idaho and eastern Oregon for the month ending April 15 totalled \$7,576,168 in contracts placed, of which \$1,039,351 was in subcontracts. There were 1,340 prime contracts represented and 1,714 subcontracts. Total cumulative figures since July 1, 1943 are \$54,258,302.

Freight—Quarterly Forecasts

Forecasts by the transportation advisory boards for the second quarter of 1944 indicate slightly heavier loadings than for the same period in 1943, as shown in the commodity tabulations below. Average weekly total of cars loaded in the eleven western states and received from eastern connections was over 185,000 cars.

Total March traffic was as follows:

Loadings	Received from eastern connections	Total
421,188	320,763	741,951

Forecast by the advisory boards are as follows:

	Pacific Coast Board Territory	Pacific N.W. Board Territory
	% of Same Quarter Last Year	% of Same Quarter Last Year
Commodity	Cars	Cars
Grain, All	4,197 + 7.4	16,660 +15.0
Flour, Meal, etc.	4,766 + 7.7	8,817 + 6.5
Hay, Straw, Alfalfa	4,000 +45.7	175 -28.6
Cotton	1,500 -30.0	—
Cottonseed, etc.	300 -14.3	—
Citrus Fruits	28,200 +20.5	—
Other Fresh Fruits	2,775 + 2.3	4,825 -24.9
Potatoes	30,080 +47.1	976 + 2.3
Other Fresh Veg'bles	38,700 + 4.2	741 +33.3
Live Stock	10,500 - 5.5	4,047 + 4.4
Poultry, Dairy Prod.	269 + 4.7	345 -23.0
Coal and Coke	4,358 +10.6	4,009 + 5.5
Ore (Iron & N.O.S.)	5,975 + 1.8	—
Gravel, Sand, Stone	33,750 -13.7	4,344 -48.8
Salt	3,541 + 8.7	—
Lumber, etc.	34,333 - 5.0	185,260 + 3.0
Petroleum, etc.	36,923 + 6.6	3,163 + 5.4
Sugar, Syrup, Molasses	5,853 - 3.8	350 - 8.9
Iron and Steel	7,899 - 3.6	2,106 + 2.6
Machinery & Boilers	3,560 +11.5	1,135 - 5.3
Cement	7,403 -34.3	4,357 -14.3
Brick-Clay Products	879 + 7.5	378 -18.5
Lime & Plaster	1,900 - 5.9	570 +18.3
Agric. imp. & vehicles	184 +25.2	153 -10.0
Fertilizers, All Kinds	8,000 + 6.5	1,070 +36.1
Paper, Paper Bd., etc.	1,450 + 1.6	5,404 - 3.9
Canned Goods	11,199 + 1.5	4,843 +11.1
Mfrs. & Misc.	160,894 + 6.8	42,821 + 4.9
Total	453,288 + 4.5	296,349 + 1.2

Revenue freight tonnage for the Pacific Coast and intermountain districts through September 1943 is as follows:

TOTAL MOUNTAIN—1943	Originated	Terminated
January	4,044,347	2,599,319
February	3,679,932	3,196,349
March	4,175,486	3,612,960
April	3,765,372	3,337,481
May	3,597,431	3,359,456
June	3,447,523	3,208,633
July	3,916,510	3,361,982
August	4,444,915	3,495,805
September	4,471,618	3,504,092

TOTAL COAST

	Originated	Terminated
January	5,780,494	6,362,550
February	5,390,673	6,116,474
March	6,203,700	7,626,997
April	6,265,215	7,730,334
May	6,923,575	7,928,765
June	7,189,202	8,311,493
July	6,974,833	8,176,564
August	7,597,671	8,350,699
September	7,458,968	8,342,980

Oil—Demand and Supply

Total demand in February for the Pacific Coast territory (Cal., Ore., Wash., Nev., Ariz.) increased 18,000 barrels daily to 1,011,000 barrels daily, while total supply increased 11,000 barrels daily to 894,000 barrels daily, necessitating the further withdrawal from storage of 117,000 barrels daily. Fuel oil demand decreased 27,000 barrels daily but gasoline demand increased 40,000 barrels daily to 315,000 barrels daily, which exceeds the demand during any month last year except September.

THE TREND

The Navy's announced program of huge shore facilities of various kinds to support the Pacific offensive promises to offset any decline in other Western war production, and forecasts of greater demand for freight cars indicate more business rather than less as the year moves. On the other hand, the tapering off of many other types of contracts has caused unemployment islands in the labor shortage sea. Resumption of civilian production is fading, judging by the cut-back on G-E's electric iron contract for its factory at Ontario, California.

LABOR

AND THE INDUSTRIAL WEST

Wage-Hour Division Offices Kept Busy

Things are humming in the Wage-Hour Division offices of the U. S. Department of Labor in the seven Western states and Alaska. Nearly 22,000 applications for permission to make wage adjustments were filed from November 1, 1942 to last February 25, and applications are still pouring into Wage-Hour offices at the rate of 350 a week, with 1,401 filed in the West in February.

The Wage-Hour Division acts as field agent for the War Labor Board, receiving applications from employers, helping them fill out the form, and checking it to make sure that complete information is given. This is in addition to the division's activity in connection with enforcement of the Federal Wage-Hour law and the Public Contracts Act.

Wage-Hour offices throughout the West also received 14,839 requests for rulings. In addition hundreds of informal requests were received, inquiries being made by telephone, by letter or through visits to Wage-Hour offices at the rate of about 3,000 a week.

Toward Labor Peace

Credit for the low number of strikes in the eleven Western states during January and February is given to industry and labor doing their part, by Ernest P. Marsh, regional director, Conciliation Service of the United States Department of Labor. In January seven strikes occurred in the 236 cases assigned to the Commissioners of Conciliation. Six of these were settled by the Commissioners. In February there were seven strikes out of the 271 cases assigned to the Commissioners and they settled six of them after brief work stoppages.

The number of labor disputes in each state were:

	January	February
Arizona	14	12
California	127	124
Colorado	15	13
Idaho	6	12
Montana	8	8
Nevada	3	2
New Mexico	10	5
Oregon	28	51
Washington	23	32
Utah	1	6
Wyoming	1	5
Inter-Regional		1
	236	271

Warning To Would-Be Farmers

In the March 17 issue of *Bosn's Whistle* put out by the Kaiser Company at its Vancouver, Swan Island and Oregon Shipyards, amateur farm buyers are warned of the plentiful pitfalls involved. A recent Kaiser survey showed that a large per cent of all shipyard workers plan to buy farms with their wartime savings, so in view of the importance of this subject to the postwar welfare of the worker, a whole page is given over to advice on purchasing farms.

The employees are warned to investigate before buying; to see their county agricultural agent, consult their neighbors and pick a reliable real estate dealer. Leading farm authorities warn of high land prices, high equipment and overhead cost, and point to the hundreds of abandoned stump farms as further proof of the sweat and tears which are the lot of those who attempt to blast a living out of land.

Re-employment Of Veterans

All men or women who were in a particular enterprise's permanent (not temporary) employ on or after May, 1940, and were subsequently inducted into the armed forces, which includes the auxiliary services and the Merchant Marine, are entitled to re-employment, provided:

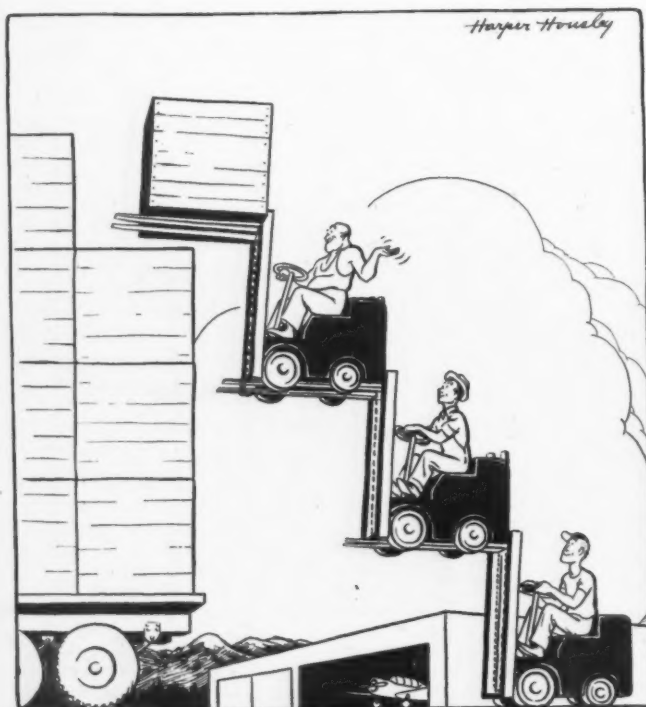
1. They have been honorably discharged;
2. They are still qualified to perform the duties of the positions they left;
3. They apply for re-employment within forty days after their release;
4. They are permanent employees and not replacements of workers already inducted;
5. The job they left, or one calling for similar skills, still exists;
6. They are willing to accept necessary training to fit them into available positions;
7. The business has not changed to such an extent as to make it "unreasonable or impossible" to rehire the applicant.

In-Plant Feeding Help

Many employers know that plant cafeterias, coffee bars and other devices for serving food inside the factory reduce absenteeism and turnover. In one widely publicized case the installation of a cafeteria in a West Coast plant cut absenteeism from 12 per cent a month to less than 5.

But many employers do not generally know that the Food Distribution Administration in each area will help employers engaged in war work or essential civilian operations to obtain the necessary priorities for equipment. If manpower is necessary to maintain these facilities, the War Manpower Commission will undertake the responsibility of referring food handlers to the employers.

Also, if the employer has facilities but finds it hard to keep help because of wage controls, the FDA and other government agencies will assist in getting wage increases from the War Labor Board. The FDA will work out arrangements with the



• If you carry this idea of efficiency in handling of materials to its logical conclusion you can do away with scaffoldings for buildings and various other things.

Courtesy The Vultair, Consolidated Vultair Aircraft Corp., Vultair Field, Calif.

OPA for industrial rations, and if existing in-plant feeding programs are being expanded, additional food allotments will be permitted.

If You Employ School Children

The following federal limitations must be complied with in employing school children:

1. No child under 14 years of age may be employed.
2. No youngster under 16 is permitted to drive a truck—even if he holds a state license to drive.
3. No school child of 16-17 may work more than 28 hours per week during school, or more than 48 hours a week when school is out. Those who are 14 to 15 may not work more than 18 hours per week.
4. No youth under 17 may work later than 10 p.m. without permission from his State Department of Labor.
5. It is the employer's responsibility to insist on proof of age and to retain it on file.

New Offices

The establishment in San Francisco of a new regional office of the Bureau of Labor Statistics has been announced by the Department of Labor. A branch office will be maintained in the Seaboard Building in Seattle, with J. W. C. Harper, who has handled the wage-analysis division of the Department of Labor in Seattle, in charge.

Funds Sufficient

With some \$500,000,000 in its unemployment insurance fund, California would be able to pay half the eligible workers the \$300 maximum benefit if the war ended at present and they lost their jobs, according

to Robert S. Billings, chief statistician of the California Employment Stabilization Commission. He told a State Senate committee that the chief question now is whether employers should pay larger percentages into the fund in order to build up greater reserves.



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THE WEST ON ITS WAY

ARIZONA

BUILDING—Winston Brothers have been awarded contract for erection of new building at the Litchfield plant of the Goodyear Aircraft Corporation. The new building will permit establishment of a second modification line.

CONTROL BUILDING AND TOWER—Wm. S. Porter, Mesa, Arizona, has been awarded contract by Civil Aeronautics Administration, Santa Monica, for construction of a wood frame control building and tower at Winslow, Arizona.

MILLING PLANT—Tucson Ore Milling Company, Tucson, has started work on construction of additions to the tungsten milling plant at Tucson. The mill will be expanded to a 50-ton day capacity. The Smaller War Plants Corp. granted a loan for this work.

BUILDINGS—J. E. Burrell & Sons, 518 W. 17th Street, Long Beach, Calif., has been awarded \$100,615 contract by U. S. District Engineer Office, Los Angeles, for construction of new buildings at Kingman Army Airfield, Kingman, Ariz.

BUILDINGS—W. S. Ford, Kingman, Arizona, has been awarded \$90,518.50 contract by the U. S. District Engineer Office, Los Angeles, for construction of new buildings, etc., at Yucca Army Airfield, Yucca, Ariz.

CALIFORNIA

DEPOT—The War Department has authorized construction of the Alameda Intransit Depot at Alameda, Calif., to cost \$4,000,000, including storage and docking facilities, administration building, cafeteria, etc. Work will be supervised by the San Francisco District Office of the Corps of Engineers, 74 New Montgomery Street, San Francisco, Calif.

BROADCASTING PLANT—National Broadcasting Company, 420 Taylor Street, San Francisco, is planning construction of short wave broadcasting plant to cost \$1,000,000.

WAREHOUSES—Robert E. McKee, 4700 San Fernando Road, West Los Angeles, has been awarded contract by U. S. Dist. Engineer Office, Los Angeles, for construction of three warehouses at Los Angeles Port of Embarkation, Wilmington, Calif., to cost \$952,187.65.

STORAGE BUILDING—Parkersburg Rig & Reel Company, Los Angeles, is building a storage building at 4001 E. Washington Blvd.

BOTTLED WATER FILLING PLANT—Kemp Bros., 2900 Hyde Park Blvd., Los Angeles, have been awarded contract by the Arrowhead & Puritas Waters, Inc., 1566 E. Washington Blvd., Los Angeles, for construction of new bottled water filling plant at Hancock and Emery Streets, San Diego, Calif.

FARM MACHINERY PLANT—John Deere and Company, manufacturers of farm machinery equipment, have selected a site in Emeryville, Calif., on which to construct a modern manufacturing and distributing plant costing upwards of a half-million dollars, to provide employment for more than 500.

PACKING SHED—WPB Urgency Committee has approved building of potato and vegetable packing shed at Arvin, Calif., to cost \$15,580.

VENEER PLANT—A new veneer plant to produce material for use in making orange and lemon boxes has been opened by the Fruit Growers Supply Company at their Susanville, Calif., operations. The plant will employ about 75 men and women. It is expected that the annual payroll at the plant will be \$150,000.

MACHINE SHOP ADDITION—Nemec Combustion Engineers, Whittier, Calif., are building a machine shop addition to the plant at 2520 Whittier Blvd.

BUILDING—Jackson Bros., 547 S. Fairfax Ave., Los Angeles, have been awarded contract by U. S. District Engineer Office for construction of building and facilities at Camp Callan, San Diego, Calif.

ENGINE TEST BUILDING—Lawrence Const. Co., 3020 V Street, Sacramento, has been awarded \$68,156 contract by U. S. Engineer Office, Sacramento, for construction of engine test building at McClellan Field, Sacramento County, Calif.

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COMMERCIAL BUILDING—James B. Allen, 1012 Elm Street, San Carlos, has been awarded \$72,380 contract for construction of a commercial building at Herlong, Lassen County, Calif.

STORAGE AREA IMPROVEMENT—Independent Const. Co., 46th Ave. and Clement St., Oakland, has been awarded contract by U. S. Engineer Office for storage area improvements, Oakland, Calif.

MACHINE SHOP—The Oakland Port Commission has granted permission to the Curtola Company, 1051 - 19th Ave., Oakland, to construct a machine shop at their plant.

WAREHOUSES—D. C. Leneve, 4825 Verona Street, Los Angeles, has been awarded contract by U. S. District Engineer Office for construction of prefabricated warehouses and facilities at Army Airfield, Long Beach, Calif.

BUILDING—Alco Const. Co., 5423 Flemish Village Lane, Los Angeles, has been awarded \$114,338.93 contract by U. S. Dist. Engineer Office, Los Angeles, for construction of rubber reclamation and repair building at San Bernardino Air Depot, Calif.

SHOPS—Bethlehem Steel Company, 2308 Webster Street, Alameda, has been awarded contract by U. S. Navy for construction of structural steel assembly and repair shops at El Toro, Calif.

BUILDING—K. E. Parker, 135 South Park, San Francisco, has been awarded \$103,872 contract by Navy Department for construction of administration office building at Navy Overseas Freight Terminal, San Francisco, Calif.

BUILDING AND SHOP—Harris Const. Company, Fresno, Calif., has been awarded contract by U. S. Engineer Office, Sacramento, for construction of pallet and boxing shop and an office building at the Lathrop Depot, San Joaquin County, Calif.

LAUNDRY BUILDING—Barret & Hilp, 918 Harrison Street, San Francisco, has been awarded contract by the Navy Department for construction of a laundry building at the Mare Island Navy Yard, Calif.

WAREHOUSES—Robert E. McKee, 4700 San Fernando Road, West Los Angeles, has been awarded \$952,187.65 contract by U. S. District Engineer Office, Los Angeles, for construction of three warehouses and utilities at Los Angeles Port of Embarkation, Wilmington, Calif.

BUILDINGS—The U. S. Navy Dept., Washington, D. C. has approved construction of radio transmitter buildings at the following stations: Camp Kearny, Brown Field, and Los Alamitos, Calif.

STOREHOUSE, ETC.—The U. S. Navy Department, Washington, D. C., has approved \$500,000 for construction of storehouse, office space and housing, refrigerated storehouse, etc., at Treasure Island, Calif.

BUILDING—Stolte, Inc., 8451 San Leandro Blvd., Oakland, has been awarded \$138,000 contract by Navy Department, Washington, D. C., for construction of public works maintenance building at the Naval Air Station, Alameda, Calif.

BUILDINGS—Oliver M. Rousseau, 321 Kearny Street, San Francisco, has been awarded \$109,300 contract by U. S. Navy, for construction of additional buildings at the Naval Supply Depot, Oakland, Calif.

BUILDING—Scherer & Prichard, 3964 Orange Street, Riverside, have been awarded contract by U. S. District Engineer Office, for construction of building and utilities at Camp Haan, Calif.

REPAIR BUILDING—Columbia Steel Company, Russ Bldg., San Francisco, has been awarded contract by U. S. Navy, Washington, D. C., for construction of structural steel radar and radar repair building at the Naval Air Station, San Diego, Calif.

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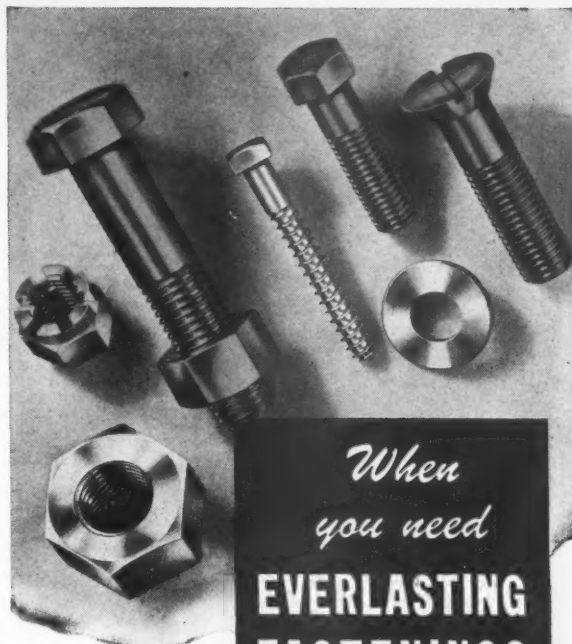
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THE WEST ON ITS WAY

PROCESSING PLANTS—WPB Urgency Committee has approved the following: Enlargement of egg-processing plant at Burbank, cost \$24,750. Addition to packing house at Irvine, cost \$30,000. Addition to Swift & Co. plant, Los Angeles, cost \$9700. Enlargement of Arden Farms dairy plant, Los Angeles, cost \$45,702. Installation of soybean processing equipment at Los Angeles, Swift & Co. plant, cost \$38,000. Construction at Oxnard of lemon storage building, cost \$16,467. Construction of frozen food locker plant at Santa Paula, cost \$8890. Installation of machinery for processing lemons at Ventura, cost \$21,982.

FACTORY—Joseph J. Stokes, 4138 Camino de la Cumbre, Sherman Oaks, Calif., have contract for the construction of a factory building at 1001 N. La Brea Avenue, Los Angeles, Calif., for the American Extruded Products Company.

BOX FACTORY, ETC.—Stratton Const. Co., 3537 E. Colorado, Pasadena, Calif., has been awarded contract by U. S. Dist. Engineer Office, Los Angeles, for construction of box factory, inflammable storage building, quartermaster storage warehouse and appurtenant facilities, Mira Loma Quartermaster Depot, Mira Loma, Calif.

CAFETERIA BUILDING—Harris Construction Company, P. O. Box 109, Fresno, has been awarded \$83,689 contract by U. S. Engineer Office, Sacramento, for construction of cafeteria building and time clock building at McClellan Field, Sacramento County, Calif.

BUILDING—Howard Hastings, Inc., 1135 N. Las Palmas Avenue, has the contract to add to an office building at 1900 W. Slauson Avenue, Los Angeles, for Arden Farms Company.

WAREHOUSE—H. H. Larsen Co., 64 South Park, San Francisco, has been awarded contract by H. J. Kaiser Co., Richmond, for alterations to warehouse at 6th and Ohio Streets, Richmond, Calif.

BUILDING—Stolte, Inc., 8451 San Leandro Street, Oakland, has been awarded contract by the H. J. Kaiser Co., Richmond, for construction of Matrons Building No. 2 at Richmond Shipyard No. 3.

BUILDING—Myers Bros., 3407 San Fernando Road, Los Angeles, have been awarded contract by The Texas Company, for construction of a locker room building at their Wilmington plant.



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ENGINE TEST BUILDING—Ford J. Twaits Co., 451 S. Boylston Avenue, Los Angeles, has been awarded \$123,900 contract by Lockheed Aircraft Corp. for construction of a ducted engine test building at factory A, Burbank.

LABORATORY—Engineers Ltd., 225 Bush Street, San Francisco, have the contract for remodeling a warehouse building into a laboratory building, located at 4560 Horton Street, Emeryville, for Shell Development Co., to cost about \$50,000.

ALFALFA MILL—Saunders Mills, Inc., plans construction of an alfalfa meal plant at Calipatria, to have a capacity of 15,000 tons.

FACTORY ADDITION—Steed Bros., 714 Date Avenue, Alhambra, have the contract for construction of an addition to a factory for Weber Showcase and Fixture Company.

EGG PROCESSING PLANT—Jackson Bros., 547 S. Fairfax Avenue, Los Angeles, have the contract for construction of an egg processing plant at North Hollywood for Olson Bros., 3855 Lankershim Blvd., North Hollywood, Calif.

CITRUS PACKING HOUSE ADDITION—Jules W. Markel, 2128 Greenleaf Street, Santa Ana, has been awarded contract for construction of addition to citrus packing house at Irvine for the Irvine Valencia Growers Association.

STORAGE AND OFFICE BUILDING—P. J. Walker Company, 3900 Whiteside Avenue, Los Angeles, has been awarded contract for construction of storage and office building addition to building 85 in Burbank, for Lockheed Aircraft Corp.

FACTORY BUILDING—Pozzo Construction Co., 2403 Riverside Drive, Glendale, will rebuild a factory building damaged by fire at 1317 Willow Street, for Colson Equipment and Supply Co.

IDAHO

CANNERY—Smith Frozen Foods, Lewiston, have been issued a permit for the construction of the first unit of three contemplated additions to existing cannery plant at Lewiston, Idaho. Plans are being prepared for a packaging room, boiler unit, etc. Other units contemplated include freezing tunnel for quick treatment of fruits and vegetables and extension of compressor room. Estimated total cost \$175,000.

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THE WEST ON ITS WAY

MONTANA

BUILDINGS—Six buildings are being constructed for the Northern Pacific Railway Company at Livingston, Montana.

LIGHTING SYSTEM—Utility Builders, 421 1st Avenue, Great Falls, Montana, have been awarded contract by U. S. Dist. Engineer Office, Seattle, for construction of a night lighting system at Great Falls, to cost \$148,000.

NEVADA

LUMBER MILL—A new lumber mill owned by the Calida Lumber Company will go into operation in the Indian Valley region of Sierra County, near Downieville.

WAREHOUSE—McCoy & Butler, 1128 F Street, Marysville, have been awarded contract by U. S. Dist. Engineer Office, Sacramento, for construction of paint, oil and dope warehouse at Reno Airfield, Reno, Nev.

OREGON

PLANT—The Northwest Fabricators plan to erect a plant at Albany, Oregon, for the construction of ready-built houses.

PLANT ADDITIONS—The Columbia Gorge Packing Company, The Dalles, Oregon, is planning construction of additions to their plant at The Dalles, including a new building, new machinery, new coolers, etc.

PLANT—Smith, Hinchman & Grylls, 800 Marquette Bldg., Detroit, are preparing plans for a \$3,600,000 plant for production of alcohol, rubber, plastics and other by-products from waste wood and will recommend to WPB use of a site at Springfield, Oregon. Plant to be operated by Willamette Valley Wood Distillation Company, whose name will be changed to Wood Chemical Co.

COLD STORAGE PLANT—Earl Newbry, Ashland, will construct fruit and cold storage plant to be located on Water Street, Ashland, Oregon, to cost about \$40,000.



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UTAH

ENGINE REPAIR BUILDING—Robert E. McKee, 4700 San Fernando Road West, Los Angeles, has been awarded \$96,430 contract by U. S. Engineer Office, Sacramento, for construction of engine repair building at Ogden Air Depot, Utah.

OPEN STORAGE SHED—R. H. Parr, 503 Beason Bldg., Salt Lake City, has been awarded \$70,300 contract by U. S. Engineer Office, Sacramento, for construction of open storage sheds at the Ogden Air Depot, Ogden, Utah.

WASHINGTON

CAFETERIA, ETC.—Boeing Aircraft Company has been allotted \$2,536,579 by DPC and is having plans prepared for construction of a cafeteria building, addition to personnel building, a warehouse, automotive service building, and reclamation and salvage plant, at Renton, Washington.

LAUNDRY—A \$25,000 addition is planned to building of the Troy Laundry Company, 307 Fairview Avenue, North, Seattle.

DAIRY UNIT—The Henrik Valle Company will construct an addition to the building of the Alpine Dairy Company, 4058 Rainier Avenue, Seattle, Wash.

PLANT ENLARGEMENT—Plans have been made for enlarging the Paragon Packing Company plant, Hoquiam, Washington.

GRAIN ELEVATOR—WPB has approved construction of a new 125,000-bushel grain elevator at Quincy, Wash.

PREFABRICATED HOUSES—North Pacific Shipbuilding Corp., Anacortes, Washington, has been awarded contract by U. S. District Engineer Office, Seattle, for furnishing 2,000 units of prefabricated houses.

BUILDING—The Austin Company, Dexter Horton Building, Seattle, will construct a building for the Zellerbach Paper Company, 1258 First Avenue South, Seattle, to cost in excess of \$60,000.

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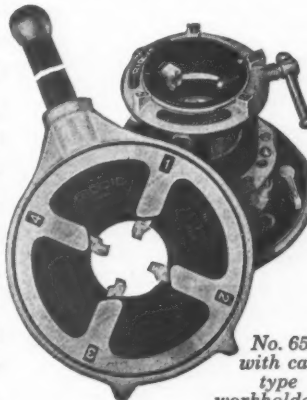


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WESTERN TRADE WINDS

NEWS ABOUT THOSE WHO DISTRIBUTE AND
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Alan C. Sweetser has been appointed West Coast manager of The Fafnir Bearing Company, of New Britain, Conn., with headquarters at Los Angeles. He will also direct operations of San Francisco and Seattle branches. The Seattle office and warehouse of The Fafnir Bearing Company have been moved to 611 East Pine Street. The recently opened branch office and warehouse of Fafnir in San Francisco is located at 434 Larkin Street. H. W. Mendenhall is manager.

W. S. Long, formerly operations manager of United States Rubber Company's Los Angeles plant, has been appointed Pacific Coast sales manager, mechanical goods. He will continue in charge of the company's war products activities on the Pacific Coast.

O. "Dave" Davison has become Western sales manager for the George K. Garrett Company of Philadelphia, manufacturers of the Diamond "G" lockwashers, AN flat washers and stampings, with offices at 5658 Wilshire Blvd., Los Angeles. His territory will cover California, Arizona, Oregon, and Washington.

The Moore Machinery Company, Los Angeles and San Francisco, have been appointed distributors for TQCCO Process induction heating and hardening equipment, by the Ohio Crankshaft Company, Cleveland, Ohio, originators and manufacturers of TQCCO Process equipment. The Moore Machinery Company will handle distribution in the California, Nevada and Arizona territories.

Elmer E. Brodhead, for 16 years manager of the open steel flooring division of Blaw-Knox Company at Pittsburgh, Penn., has become a partner in the firm of W. S. Wetenhall Company, San Francisco, distributors of steel products. He is succeeded at Pittsburgh by N. I. Mekeel, Jr.

Fred E. Miick has been appointed district manager and Fred A. Koepf, assistant manager, of the Los Angeles office of Link Belt Company, Pacific Division. Miick succeeds E. C. Berghofer, who has retired after 42 years of service to the company.

Photo & Sound, Inc., San Francisco, have moved their film production division to 606 Montgomery Street, where there are stages for two crews to work simultaneously, and other facilities.

The Eccles & Davies Machinery Co., Inc., of Los Angeles, has been appointed exclusive California agent for The Pantasote Company, Inc., of New York City.

Harron, Rickard & McCone Company have been appointed representatives for The Avey Drilling Machine Co., Inc., manufacturers of the Avey line of drilling machines, in California, western Nevada and Arizona.

Sylvania Electric Corporation have decided to enlarge their Pacific Coast operations, with main headquarters in San Francisco at 111 Sutter Street, pending making arrangements for warehouse facilities, which may necessitate building their own plant. G. W. Patterson, who has been with Sylvania in Los Angeles for a number of years, has been appointed manager of renewal tube sales. George C. Connor, electronic engineer (a native of Hoquiam, Wash.), has also been transferred from New York to Los Angeles and will handle radio equipment and electronic products in that area. Sylvania, formerly represented by the Arthur S. Detsch Co. in Portland, now have a factory branch with offices and warehouse facilities in Seattle.

W. A. Martin, Portland, for many years exclusive representative of the S. A. Woods Machine Company and W. B. Merzhon Company, is now heading his own machinery company at 303 S.W. First Avenue. In addition to his previous lines he is representing Baxter D. Whitney & Son, Inc., Hermance Machine Co., and Irvington Machine Works.

Philip H. Clapp has been appointed abrasive division district manager for the Pacific Coast by Norton Company, with headquarters in Los Angeles.

The Pacific Coast branch of Merritt Engineering & Sales Company, 305 Maritime Building, 911 Western Avenue, Seattle, has been appointed sales representative in Washington, Oregon and British Columbia for the Charles E. Francis Company, Rushville, Indiana, manufacturers of glue room equipment and hydraulic plywood presses.

Sidney H. Webster, formerly advertising and technical data director for Eclipse Aviation Products, has been appointed Pacific Coast sales and engineering representative of the Eclipse-Pioneer division of Bendix Aviation Corp., with headquarters in Los Angeles.

Frank H. Bennett, formerly general manager, Garrett Supply Company, has established his own business at 1110 S. Los Angeles Street, Los Angeles, under the name Bennett Abrasive Engineers. With him as salesmen are F. F. Filloon, L. L. Evans, J. E. Hibbert, W. O. Elderkin, and Thomas W. Lawrence.

The newly formed Albert Ramond and Associates, Inc., formerly The Badaux Company, Inc., with offices in the Russ Building, San Francisco, has the following executives in the West: A. A. Dobson, vice president, San Francisco; C. W. English, vice president, the Northwest; and E. D. Hayward, district manager, Southern California.

The Square D Company, manufacturers of a wide variety of electrical devices for the control of electricity, has opened a direct factory branch in Seattle.

Donald M. Crooks, who until recently was in charge of engineering for Hayward Lumber and Investment Company, Los Angeles, has been named midwest representative for Douglas Fir Plywood Association with Chicago offices. Joseph Weston is the Association field man located at Los Angeles, Calif.



Paul C. Wilmore, right, General Electric Public Relations Manager for the West Coast, has been transferred to Cincinnati, Ohio, to head the new G.S. household appliance distributing branch. Wilmore's former post has been taken by F. Lowell Garrison, left, former sales manager, General Electric Supply Corp., Butte, Montana, who will be located in the Russ Bldg., San Francisco.

C. H. Coats has been appointed field service representative for the exhaust systems division of Ryan Aeronautical Company.

K. T. Vangnes, long associated with the aircraft industry on the West Coast, and for the past five years vice president of Magnesium Products, Inc., Los Angeles, has been given charge of magnesium sales activities for the Pacific Coast for The Dow Chemical Company of Midland, Michigan, with headquarters in Los Angeles.

L. H. Chenoweth, manager of plastic products of The B. F. Goodrich Company, was a speaker before a group of retail executives in San Francisco March 24. His topic was postwar uses of the Goodrich product Koroseal.

The following appointments have been made by Westinghouse: William D. Turnbull, who has been vice president and sales manager of the Pomona Pump Company of California, has been appointed manager of the Agency and Specialties Department. Fred H. Luthile has been named district store manager for the North Pacific District, succeeding Ralph H. Sroufe, transferred to Des Moines, Iowa. Merritt Upson succeeds Luthile as assistant stores manager. Richard B. Borland has been named manager of the Lamp Division's Los Angeles office. . . . W. E. Lee has been appointed marine representative for Westinghouse in Los Angeles. He succeeds E. W. Fullman, who has resigned to become sales engineer for Fafnir Bearings, Inc., in the Los Angeles area.

Change of name of The Waterbury Button Co. of Waterbury, Conn., to Waterbury Companies, Inc., is reported by their Pacific Coast representative, F. W. Baude, 667 Mission Street, San Francisco. They are large manufacturers of various plastics items.



E. J. Masline, general superintendent of The Union Metal Manufacturing Company for the past 19 years, has been appointed general manager and director of Pacific Union Marbelite Company, with headquarters in Los Angeles. The Pacific Union Marbelite Company is a subsidiary of Union Metal, functioning as manufacturers and Pacific Coast sales representatives for the parent company. A. R. Miller, electrical and maintenance engineer, succeeds Masline as general superintendent.

THE SHOWCASE

Brake Lining—Gatke External Dura-Blok brake lining is improved moulded brake lining with wire back reinforcement for use with external (band or contracting type) brakes. It is used on many applications to replace woven brake lining. Rolls of Gatke



External Dura-Blok are furnished in a complete range of sizes up to $\frac{3}{8}$ in. thick by 6 in. wide. *Gatke Corporation, Chicago 1, Illinois.*

Pluswood—Pluswood is a new wood alloy, made initially to do a fighting job in the war. It is a resin impregnated plywood, heated by high frequency waves and simultaneously compressed under heavy pressure. Natural uncolored Pluswood is a deep, rich brown. It carries a beautiful wood grain with a high, permanent, gloss finish, a luster practically unassailable to wear and exposure. This high density wood weighs about one-half as much as aluminum. It can be drilled, turned, threaded, milled, and tapped, is highly resistant to decay, swelling or shrinking. *Plywood, Inc., Oshkosh, Wis.*

Toggle Clamp—A small, light duty toggle clamp with a T-shaped handle is for use in spots where limitation of overhead space prohibits the use of the larger or taller clamps. The T-handle provides a firm grip, not secured with a shortened straight handle of the standard type. The new clamp is available with either the straight solid work bar, De-Sta-Co Model No. 207-TS, or the now widely used U bar, Model 207-TU. In this latter model the retaining bolt can be set at any desired distance from the handle, thereby making the clamp adaptable to varied job requirements. Dimensions are $3\frac{7}{8}$ in. from end of work bar to end of base and 4 in. high overall when in locked position. *Detroit Stamping Company, Detroit 3, Michigan.*

Barrel Cradle—Especially designed for picking up barrels and plywood or fiber drums without chimes (flush ends) but may be used for picking up any other type barrel or drum. Built of heavy bar stock, welded construction. One end of barrel cradle is built rigid, while the other is piv-

oted and provided with strong spring which simplifies engaging of cradle fingers to any type drum or barrel. *Palmer-Shile Company, Detroit 17, Michigan.*

Salt Tablet Dispenser—StaSafe Junior and Midget all metal salt tablet dispensers are guaranteed against mechanical failure for five years from date of purchase. The larger capacity of 1500 ten-grain tablets is made entirely of a corrosion-resistant alloy and has simple mechanism. Simple to disassemble and clean. Comes complete with instruction poster. Equipped with lock and key, wall bracket, and inspection window for judging the reserve supply. *Standard Safety Equipment Company, Chicago 10, Illinois.*

Cold Stripper—For removal of camouflage paint from airplane surfaces and parts KDL No. 28 is applied by brushing or spraying. It loosens the paint so that the job can be completed by rinsing with high pressure water, and is said to be safe for aluminum, brass, bronze and steel. *Kelite Products, Inc., Los Angeles 1, Calif.*

Clamp—"Quick-Coupler," a new type clamp, combines a snap-on latch with the full adjustment of a standard clamp, all in one unit, permitting instantaneous removal of the clamp or its quick installation. It is suited for handling removable equipment such as oxygen containers, fire extinguishers, duct sections, and is available in all sizes in aluminum alloy and stainless steel and in shapes to fit all convex surfaces, and may be had with self-locking, plain hex or wing nuts. It embodies Marman's patented design which permits application of a uniform radial pressure to the periphery of the parts over which it is installed and its rugged construction allows re-use without efficiency loss. *Marman Products Co., Inc., Inglewood, Calif.*

Wet Grinder—New wet grinder has a perfectly true, concentric running, 10-inch Berea quarried sandstone wheel, accurately centered on its arbor, so as to grind a straight bevel from heel to edge without weakening tool temper. Designed for proper grinding speed of 120 r.p.m. the grinder throws no water and may be belted to a 1750 r.p.m. motor, lineshaft or gas engine. Every grinder is given a running test. *Boice-Crane Company, Toledo, Ohio.*

Battery Connector—Electrical connector AN3101 looks like a plug but has been designated as a "receptacle" inasmuch as it has a male coupling thread similar to Types AN3100 and WN3102. It is a mating cord connector for AN3106 and AN3108. Since it has no mounting facilities such as the flange on Types AN3100 and AN3102, it may be used in place of them when regular mounting is not necessary. It is also adaptable for use with an extension cord. Shell material is aluminum alloy, with sand blast and clear lacquer finish. Thread lubricant on threads. Available in sizes 8s to 16s and 12 to 36 inclusive. *Cannon Electric Development Company, Los Angeles 31, Calif.*

Strap Wrench—This new tool is intended for better handling and protection of polished nickel and chrome pipe and tubing. It is made with strong I-beam handle and



solid head, all in one piece, with a handy hang-up hole at the end. It is easy to attach and use, is positive in grip. Special webbing strap of great strength is quickly removed for replacement by pushing out pin held by spring clips. This RIDGID Strap Wrench is made in two sizes: No. 2, capacity $\frac{1}{8}$ in. to 2 in., 17 in. strap; No. 5, 1 in. to 5 in., 30 in. strap. *Ridge Tool Company, Elyria, Ohio.*

Yessir!

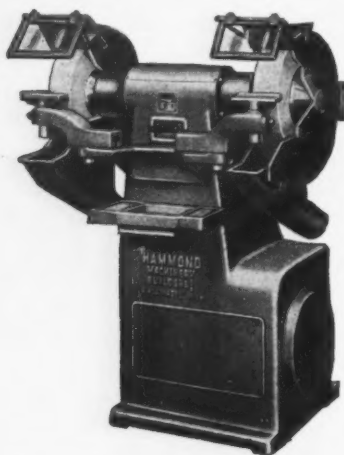
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Magnesium Grinder—Hammond 10", 12" and 14" grinders (Series RW) are equipped with heavy plate wheel guards which have direct exhaust outlets (no pockets) for connection to dust collecting system. Machines are also equipped with explosion proof electrical equipment, and with larger oversize spindles for smooth vibrationless



operation, larger bearings sealed against ingress of dust and grit, multi V-belt drive so any desired spindle speed may be obtained. *Hammond Machinery Buildings, Inc., Kalamazoo, Michigan.*

Belting—Belting made with the new synthetic rubber from government plants, known as GR-S synthetic rubber can be joined to natural rubber belting with a vulcanized splice. This makes it possible to use sections of the new GR-S synthetic belting to repair existing belting when needed. *The B. F. Goodrich Company, Akron, Ohio.*

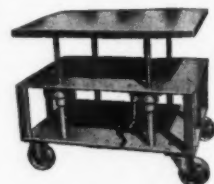
Wheelbarrow Type Air Compressor—A new, compact, wheelbarrow type air compressor unit, weighing only 225 pounds, is easily wheeled by one man, and is capable of handling many jobs that require high capacity performance. A Model 216 single-stage compressor, operating at a speed of 1250 rpm, approximately double normal compressor speed, is used. Features incorporated to overcome unfavorable outdoor conditions are: steel front wheel that is mud and water-proof and an ingenious belt tension adjusting device for easier starting of the gasoline motor in extremely cold weather. By means of a hand crank, the compressor load is taken from the motor during starting, and the belt then tightened again for operation. *Quincy Compressor Company, Quincy, Illinois.*

Motor Control—Eleco RPM Control uses the company's electronic transformer and provides a variable speed control with ratios as high as 100 to one with constant torque and horsepower. No special motor is required with this control. Any DC motor may be used with far higher efficiency than previously obtained. They are ideal for industrial plants, using any form of lathes, drill presses or other machine tools, and well adapted to be used in saw mills, mine hoists, oil well drilling, elevators, conveyors, and marine boats. *Electron Equipment Corporation, South Pasadena, Calif.*

Box Grab—A new Spike Type Box Grab recommended for use in grabbing, holding and lifting large export boxes, heavy boxed machinery or other similar boxed merchandise on which spiked grips may be used. The gripper plates are fitted with replaceable cone-headed spike bolts. Four

models available in capacities of 1000, 2000, 3000 and 4000 pounds respectively, the heavier the load the tighter the hold. May be used on boxes up to five feet wide. Chain length adjustable for high or low ceilings. *The Palmer-Shile Company, Detroit 17, Michigan.*

Portable Lifting Table—New flat top portable lifting table with a simple crank-up mechanism, is adjustable to heights ranging from 24" to 40" enabling operators to quickly and easily handle dies of all sizes and shapes. In addition to use in removing, placing and conveying dies, the table may also be used to support and level long bars, sheets, frames, etc., for fabrication on horizontal mills and for other



handy applications in tool room or shop. Huskily built for long service with electric-welded, steel construction, Barret Lifting Tables are available in two sizes. Style F-1 has a table size of 28" x 40" with a maximum weight capacity of 3000 pounds. F-2 is 24" x 32" for maximum load of 2000 pounds. Both have heavy duty ball bearing casters and may be furnished with wheel brakes. *Barrett-Cravens Company, Chicago, Ill.*

Machine Chuck—A new hydraulic multi-grip milling machine chuck, the Aero Multi-Grip Chuck has two rows of five collets. As both rows of parts may be milled simultaneously, ten parts may be milled with one loading. A few strokes of the hydraulic hand pump supplies the necessary pressure for closing all collets simultaneously building up pressure to as much as 2,500 p.s.i. Work is thus held rigidly in collets and cannot turn or be pulled out during milling operations; however, clamping pressure may be instantly released when desired and the self-opening collets can be quickly reloaded. Self-centering aligning collets insure perfect on-center milling regardless of slight shank diameter variations. An automatic safety stop prevents damage to collets should all stations not be filled. An adjustable depth stop for each collet makes it possible for the operator to insert pieces to be milled at exact required amount without use of gauges. The new chuck comes in two models: Model 10B measures 14 1/4 x 4 1/2 x 4 1/2 in. with a collet capacity of from 1/8 to 1/2 in. Model 10-E measures 21 x 6 3/4 x 6 3/4 in., with collet capacity of from 1/2 to 1 1/4 in. Round, square and hexagon collets are available for both chuck models. *Aero Corporation, Hollydale, Calif.*

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1419

Contour Machines and Industrial Tools—Booklet "Production Today with DoAll Products" contains a brief but complete summary of all the new tools now carrying the DoAll name, including contour sawing and filing machines, cutting machines, precision band saws, band filers, gages, dust collectors, etc. *DoALL Service Co., Des Plaines, Illinois.*

1420

Milling Machine Chuck—Four page folder giving complete information, illustrations, specifications and prices on the new Hydraulic Multi-Grip Milling Machine Chuck which is said to speed up milling operations. *Aerco Corporation, Hollydale, Calif.*

You owe it to yourself to keep posted—only the efficient business survives under the strain and pressure of the war effort. Literature listed in these columns may be just the answer to your need for greater production, substitute materials or knowledge of how to care for your equipment. Just drop a note to Western Industry, 503 Market St., San Francisco, and copies will be forwarded to you. If you do not use business letterheads, please name your company affiliation.

1421

Tools—Booklet 5350 "Operating Information on Stellite 98M2 Cobalt-Chromium-Tungsten Alloy Turning and Boring Tools and Milling Cutters" explains through drawings, photographs and charts, the cutting angles, speeds and feeds, chip-breaker grinds and grinding wheels recommended for use with Stellite 98M2 turning and boring tools and milling cutter blades. A chart listing the grinding wheels recommended by 13 different manufacturers is given as a guide to selecting grade and grain for grinding operations. *Haynes Stellite Company, Kokomo, Indiana.*

1422

Valve Selection Chart—New simplified valve selection chart available on heavy cardboard for tacking up, helps select the right valve for the job. By a simplified breakdown of conditions to consider when selecting, and an explanation of what these conditions determine in the operation of a valve, this chart offers the valve buyer a "slide-rule" for valve selection. A more comprehensive explanation is given below the breakdown and also the "example" which uses the facts brought out in the chart for selecting the right valve for a specific condition. *Reading-Pratt & Cady Division of American Chain and Cable Company, Inc., Dept. S.P., Bridgeport, Conn.*

1423

Blanks—Six page, four color technical and descriptive bulletin CB-43 lists over 50 "Detroit" standard blanks for thread milling cutters, carried in stock ready for thread grinding to users' specifications. *Detroit Tap & Tool Co., Detroit 11, Michigan.*

1424

Electric Hand Tools—16-page booklet "Facts and Figures" tells about high speed electric hand tools and what they do, giving outstanding features of the Precise 35, a super high speed electric hand tool operating at 35,000 r.p.m., together with description of various accessories and mounted wheels and midjet milling cutters. *Precise Products Company, Racine, Wisconsin.*

1425

Riveting Tools and Equipment—Catalog of riveting tools and equipment is illustrated and divided into sections and indexed for customers' ready reference. Sections are on Rivet Sets, Squeezer Sets, Dimpling Tools, Bucking Bars, the new Hi-Shear Riveting Tools and General Riveting Information. *Emerson Engineering Co., Los Angeles 13, Calif.*

1426

Powdered Metal Parts—32-page booklet "Powder Metallurgy" covers advantages and latest applications of powdered metal parts. Types of design and specifications for standard forms as well as intricate shapes are presented in detail. Also included is a Designers Aid Section and table on Engineering Properties. The second section of the booklet is devoted to Self-lube Porous Bronze Bearings, Self-lube Porous Iron Bearings and D-10 Graphite Impregnated Brass Bearings. In addition to catalog listing of standard shapes and sizes available, technical data on performance, installation and care is included. *Keystone Carbon Company, Inc., Saint Marys, Penna.*

1427

Brush Care—Circular containing message of wartime conservation, presenting well organized suggestions on the care of brushes. *Empire Brush Works, Port Chester, N. Y.*

1428

Tools—4-page stock tool bulletin No. 44-1 covers revised line of single-point, diamond-ground carbide tools. Complete specifications and prices of all tools carried in stock are listed. *Tungsten Carbide Tool Company, Detroit 6, Michigan.*

1429

Wire Cloth Price List—96 page pocket-sized booklet "Industrial Wire Cloth, Engineering Data and Price List" explains simplified ordering procedure facilitating shipments, explanations of different types of weaves in wire cloth, metals and alloys available, and laboratory and research facilities. Tabular material lists complete data on wire sizes, gauges, standard weights for each size of diameter for various metals and alloys, and methods of calculating weights of wire cloth. *The C. O. Jelliff Mfg. Corp., Southport, Conn.*

1430

Piston Rings—8-page reprint of a technical paper entitled "The Vibration Characteristics of 'Free-Free' Circularly Curved Bars" reports outcome of an extensive study in connection with the behavior and design of piston rings. *The Cooper-Bessemer Corporation, Mount Vernon, Ohio.*

1431

Dust Collector—Bulletin No. 910 gives features and construction specifications, together with the capacities and dimensions of the three sizes available in new Industrial Type "CK" Unit Dust Collector which features flexibility in arrangement permissible for adaptation to specific plant conditions. *Pangborn Corporation, Hagerstown, Maryland.*



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Steel Hardening—Circular on "Nusite" process which hardens high-speed steel. Tools so treated are both harder and tougher, do not chip and will stand long runs. "Silver Finish" hardening and "Deepfreezing" processes are also described in this circular. *The Perfection Tool & Metal Heat Treating Company, Chicago, Ill.*

Conveying Unit—Bulletin No. 442 gives capacity tables, horsepower formulas, general arrangements and dimensions of the Rex Uni-Flo, a conveying unit of the continuous-stream type. It is composed of a chain belt equipped closely-spaced scrapper-carrier flight, which operates in an enclosed casing. With the entire cross section of the casing and all the space between the flights solidly filled with the material being handled, a continuous flow of material results. *Chain Belt Company, Milwaukee 4, Wisc.*

Plastics—24-page non-technical booklet "Facts About Plastics" covers all types of plastics, their uses and general information on the plastics industry. Uses and limitations of plastics are given. *The Richardson Company, Department 100, Melrose Park, Illinois.*

Laboratory Apparatus—20-page illustrated booklet "Metallurgical Laboratory Apparatus," Bulletin 76, describes new and specialized instruments for rapid analyses of metals and alloys. Included is the Cenco "Photometer" for fast and accurate determinations of molybdenum, vanadium, silicon, chromium in steel, lead in silver, etc., also carbon and sulphur determinators; combustion furnaces, electroanalyzers, ultra violet sources for fluorescent examinations and other improved items. *The Central Scientific Company, Chicago, Ill.*



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Visual inspection of surface coincident with inspection for size.

Y-113

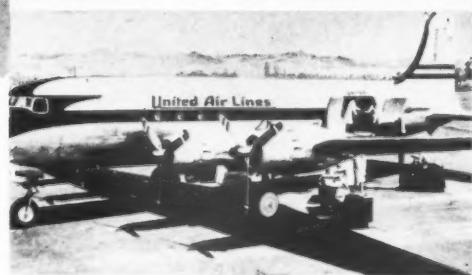
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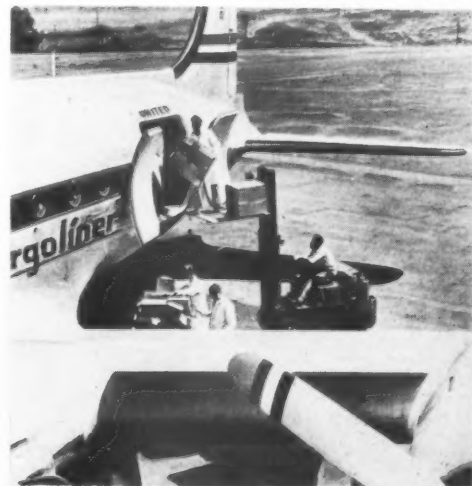
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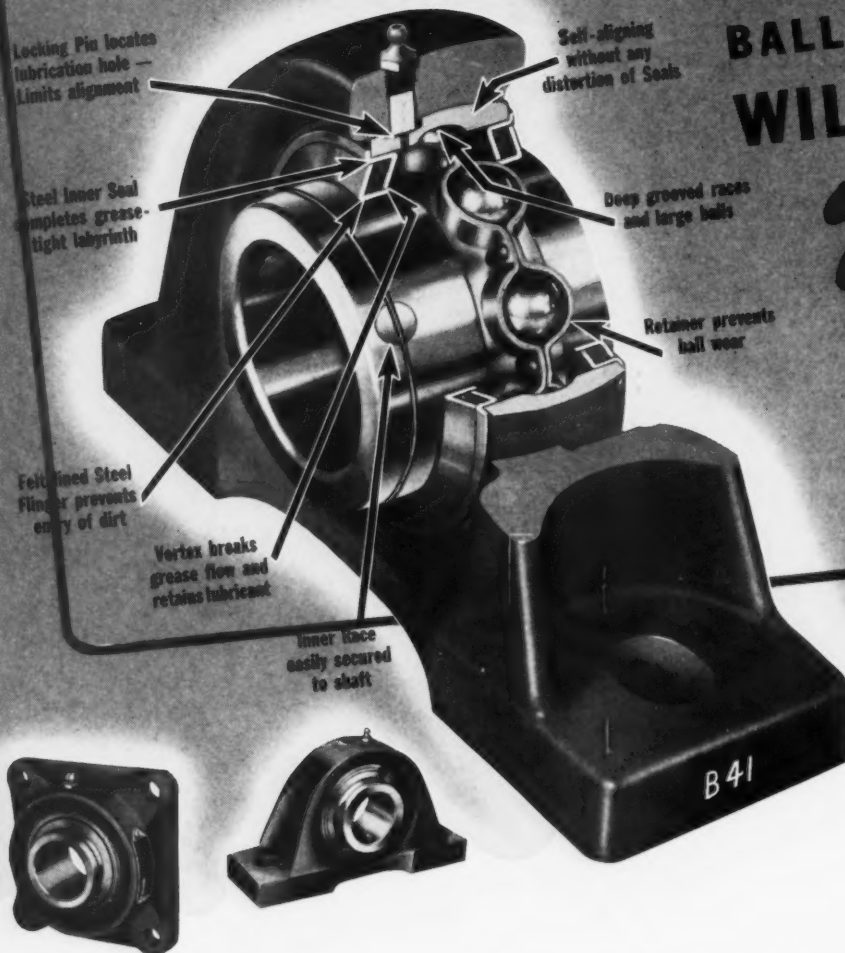
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